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UNCTAD



PROMOTING LOCAL IT SECTOR DEVELOPMENT THROUGH PUBLIC PROCUREMENT



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THROUGH
PUBLIC PROCUREMENT



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PREFACE

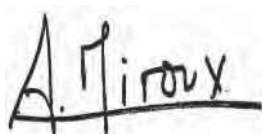
The contribution that a dynamic local information technology (IT) industry makes to national economic development – as a productive sector in itself and, more importantly, as an enabler of productive use of information and communication technologies (ICTs) throughout the economy and society – has encouraged policy makers all over the world to put in place public policies and programmes that facilitate its development.

A wide range of instruments are available to policy makers in this context. Designing and implementing public procurement practices that help to increase the participation of local IT firms when the public sector acquires IT goods and services represents one such instrument. However, successful use of public procurement policies requires a clear vision of the overall policy objective and a good understanding of the local IT sector's strengths and weaknesses.

Until now, relatively little attention has been paid to the link between public procurement and local IT sector development in developing and emerging economies. This joint UNCTAD-BMZ study seeks to address this gap and to provide decision makers with an improved basis for understanding when and how public procurement can be leveraged for the development of a vibrant IT sector. The report builds on the analytical and practical experience of UNCTAD and German development cooperation in designing and implementing measures to promote ICT sector development and build local ICT capacities in developing and emerging economies.

The report identifies seven main strategies countries may consider in this context. Based on a review of the experience of Kenya, Senegal and Sri Lanka in this area, it distinguishes between elementary measures – such as establishing open and competitive procurement processes or regular public-industry dialogues that all countries should adopt – and more advanced measures that may be appropriate once a country reaches a certain threshold level of maturity in its public procurement practices and IT sector capabilities. Policy makers need to identify a balanced mix of strategies suitable to their specific context, encompassing complementary interventions at the macro, meso and micro levels.

The successful application of public procurement for the promotion of local IT sector development is complex but can be a powerful policy tool. Our expectation is that the findings and policy recommendations included in this report will help public procurement officials, promoters of the ICT sector, e-government programme managers, local IT/software associations and the donor community to identify more effective strategies in this field.



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The study was prepared by a team led by Torbjörn Fredriksson (UNCTAD), Bernd Friedrich (GIZ) and Pierre Lucante (GIZ), which included Johanna Diecker, Anja Kiefer, Marta Pérez Cusó (coordinator), and Thorsten Scherf.

Helani Galpaya provided inputs for chapters 1 and 2, conducted the case study on Sri Lanka and coordinated the inputs for the case studies of Kenya and Senegal. Lishan Adem prepared the case studies of Kenya and Senegal. The case study of Senegal draws largely on a previous study conducted for GIZ by Volker Brunsiek and Hannes Restel on interoperability of IT systems in the Senegalese public sector and the promotion of IT SMEs in Senegal.

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ADIE	State Agency for Informatics (Agence de Développement de l'Informatique de l'État – Senegal)
ARMP	Public Procurement Regulatory Authority (Autorité de Régulation des Marchés Publics – Senegal)
BMZ	Federal Ministry for Economic Cooperation and Development (Germany)
BPO	Business process outsourcing
CMMI	Capability maturity model integration
CMP	Public procurement code (Code des marchés publics – Senegal)
DCMP	Central Directorate of Public Procurement (Direction Centrale des Marchés Publics – Senegal)
EGDI	E-Government Development Index
ERP	Enterprise resource planning
FOSS	Free and open source software
FDI	Foreign direct investment
FITIS	Federation of Information Technology Industry Sri Lanka
GDP	Gross domestic product
GIC	Government Information Centre (Sri Lanka)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
HR	Human resources
HRM	Human resources management
ICT	Information and communication technology
ICTA	ICT Agency (Sri Lanka)
ID	Identification document
IFMIS	Integrated Financial Management Information System
ISIC	International Standard Industrial Classification
ISO	International Organization for Standardization
IT	Information technology
ITES	IT-enabled services
ITIL	Information Technology Infrastructure Library
JICA	Japan International Cooperation Agency
JV	Joint venture
KTCIP	Kenya Transparency and Communications Infrastructure Project
MIC	Ministry of Information and Communication (Kenya)
MNC	Multinational corporation
MPS.br	Brazilian Software Process Improvement Program

OECD	Organisation for Economic Co-operation and Development
OPTIC	Organization of Professionals of Information and Communication Technologies (Organisation des Professionnels des Technologies de l'Information et de la Communication – Senegal)
PIN	Personal identification number
PMP	Project management professional
PPDA	Public Procurement and Disposal Act
PPOA	Public Procurement Oversight Authority
PPP	Public-private partnerships
SME	Small and medium enterprise
SWOT	Strengths, weaknesses, opportunities and threats
UCAD	University Cheikh Anta Diop
UNCTAD	United Nations Conference on Trade and Development
UNCITRAL	United Nations Commission on International Trade Law
VAT	Value added tax
WAEMU	West African Economic and Monetary Union
WITSA	World Information Technology and Services Alliance

EXECUTIVE SUMMARY

Developing a thriving information and communication technology (ICT) sector is a priority for many developing and emerging economies. It drives private sector productivity and competitiveness, creates employment and spurs innovation, including in low- and middle-income countries. Its contribution to economic development is twofold. First, the ICT sector itself contributes to GDP growth. Second, firms, organizations as well as individuals have greater opportunities to use ICT productively when locally based firms are available to provide relevant ICT products and services at affordable prices and in a timely manner. Against this background, finding effective policies to support ICT sector development is important.

To this end, the study focuses on how public IT investments and related public procurement can support the development of local IT firms. While leveraging public procurement is potentially a powerful instrument for governments to consider, it has hitherto been insufficiently explored in most developing and emerging economies.

Within the ICT sector, IT services offer the most promising opportunities in this context. In most developing countries with a nascent IT industry, providing services for the local market is often the most natural entry point for newly established enterprises. At the same time, the government and public sector is often the largest buyer of IT services. The increasing deployment of e-government services and the associated demand for IT services from the public sector represent a key market for local IT firms. Opportunities for them to participate in public procurement tenders exist especially in:

- Projects requiring local language, local presence or local-foreign partnerships
- System integration contracts
- Bespoke IT systems
- Low-value contracts

However, the participation in public tenders of local IT SMEs is often challenged by:

- The technical complexities of IT procurement (such as legacy or lock-in issues)
- The lack of IT standards and interoperability frameworks

- Inadequate procurement frameworks and weak procurement capacities
- The use of previous experience or bid/performance requirements to mitigate procurement risks
- The restricted access to tender notices, either because of their cost or their limited publication

The primary aim of public procurement is to obtain value for money. This is best served by having a reasonably large number of firms – local and international – competing in the tendering process. This report emphasizes that the promotion of the local IT services industry does not need to be inconsistent with this objective. Various measures can be used to promote the participation of local IT firms in public tenders while, at the same time, maintaining a competitive bidding process.

The study identifies seven distinct strategies that governments can implement to promote the local IT services sector using public procurement:

1. Ensuring that key conditions for success are in place: a shared IT and public procurement policy, a critical mass of public ICT projects and a good understanding of the capabilities of the local IT services sector.
2. Strengthening the institutional framework.
3. Establishing good practices along the entire procurement process.
4. Providing targeted preferential treatment of local suppliers without jeopardizing the quality of the goods or services procured.
5. Increasing the options for SMEs to submit bids.
6. Adopting best practice software design to facilitate local firm participation.
7. Promoting awareness and capacity development, both among IT firms and in relevant public authorities.

Case studies of Kenya, Senegal and Sri Lanka are used to illustrate to what extent these options may be feasible in the context of different ground-level realities. Each of the three countries has leveraged these strategies to varying degrees to promote their local IT services firms.

In **Sri Lanka**, ICTA (the agency responsible for large e-government programmes) has stimulated local IT SMEs development by establishing a framework of

transparent and competitive tender procedures, and using a wide range of public procurement strategies and tools. For instance, by providing targeted preferential marks to local firms, it has encouraged joint ventures between local and international enterprises, and promoted technological capacity development among local firms.

In **Senegal**, a policy and legal environment to support local IT firms' participation in public procurement has been put in place. However, results on the ground have so far been modest. There is scope for making procurement procedures more transparent (e.g. by improving the technical content of tender documents and by providing feedback on the tender process). Senegal has not yet adopted strategies to bridge information asymmetries, use best practice software design, or provide training to local SMEs.

Kenya has seen limited progress to date in involving the local IT sector in public procurement. While the existing policy framework is favourable to the promotion of SME participation, it focuses mainly on supporting export-oriented IT-enabled services (ITES). Sound and transparent public procurement practices are only partially implemented. As in the case of Senegal, strategies to bridge information asymmetries or to use best practices in software design have yet to be developed.

In all three country studies, most actions have been taken at the macro level (for example, with the establishment of enabling legislation). Interventions at the meso and micro level to strengthen the contribution of national IT associations and develop the capabilities of local IT SMEs have been limited.

Using public procurement strategies to promote the local IT services industries is a complex and thus challenging endeavour. In order to succeed, key agencies of the government need to be on board and agree on a strategy that is in line with broader development plans. It requires a clear vision of the overall objectives to be achieved and a solid understanding of strengths and weaknesses of the domestic IT services industry. Its successful application also necessitates a certain level of capabilities in both the public and the private sector.

For those Governments that decide to leverage public procurement for the development of local IT services, the following recommendations are made with regard to the seven strategies.

1. Ensure that key conditions for success are in place: a shared IT and public procurement policy, a critical mass of public ICT projects and a good understanding of the capabilities of the local IT services sector.

It is essential to secure the commitment from key authorities. First, the different ministries and agencies involved should agree on a common vision and objective. This requires that public procurement policies are effectively integrated in broader ICT policies. Second, the promotion of domestic demand for IT services should be recognized as a complement to efforts aimed at supporting export-led growth of the sector. Third, before launching a major initiative to leverage public procurement, governments should explore their current and future needs for e-government systems. Finally, an understanding of the capabilities of the local IT services sector has to be developed at an early stage to assess the kind of projects that could be undertaken by domestic suppliers.

2. Strengthen the institutional framework: promoting public-private sector coordination and designating an agency to spearhead public procurement for local IT sector development.

The competitiveness of local IT industries is most effectively improved if all relevant stakeholders cooperate in strategy formulation and implementation. Effective private-public dialogue is important to identify barriers to local IT sector participation in public procurement and the need for capacity development among local SMEs. Public sector coordination is required to implement IT standards and interoperability frameworks, pool tenders and adopt good procurement practices.

The successful implementation of public procurement strategies that also promote local IT firm participation may require improvements in the institutional set-up. Countries may consider promoting an agency or a department to spearhead public procurement for local IT sector development. Such sponsoring should be accompanied by sufficient financial, technical and human resources. Without a well-governed and transparent process and sufficient resources, it may result in unwanted effects, such as added bureaucracy and wasteful use of limited resources.

3. Establish good practices along the entire procurement process.

Countries should establish clear, transparent and open tender procedures to ensure successful outcomes of any public procurement processes. E-procurement can help to make bidding processes more open and transparent. Governments can start by putting in place some of the easier to execute applications of an e-procurement system, such as the online publication of tenders and procurement notices.

4. Provide targeted preferential treatment of local suppliers without jeopardizing the quality of the services procured.

The use of preferential marks for local experience, local language and local presence within open and competitive public procurement processes can be effective in terms of encouraging the participation of local firms. Such preferential marks can also be used as an incentive for the formation of joint ventures between local and foreign firms, which can allow local and less experienced firms to build relevant skills.

5. Increase the options for SMEs to submit bids.

In order to reduce the threshold for local SMEs to participate in the bidding process, governments should consider providing concessions on bid and performance guarantee requirements. Another way to increase the options to submit bids for SMEs that have limited experience in public procurement is to use quality control criteria other than a previous track record specifically linked to public procurement.

6. Adopt best practice software design to facilitate local firm participation.

The use of modular design of systems and architecture allows for the tendering of smaller projects and greater participation of local firms. This approach, however, requires a certain degree of authority to establish technical standards, advanced technical software development skills among the procuring offices, and careful attention to IT standards and interoperability frameworks.

Where feasible, Governments should consider the use of free and open source software (FOSS) since it can bring positive results in the form of reduced costs and greater possibilities for local suppliers to provide solutions. Meanwhile, common barriers to FOSS adoption include a shortage of skilled

FOSS developers and lobbying against the use of FOSS by proprietary software firms.

7. Promote awareness and capacity development, both among IT firms and in relevant public authorities.

A common obstacle to greater involvement of local IT services firms is a lack of awareness of available opportunities among IT firms and public authorities responsible for the procurement process. Measures to raise the level of mutual awareness are therefore recommended. Beyond awareness-raising, governments – ideally in collaboration with IT industry associations – should also consider providing training for SMEs on how to submit bids. Such training does not appear to be widespread yet but it has had positive results when applied.

There may also be a case for sponsoring programmes to enhance the capabilities of SMEs to work with relevant FOSS that is likely to be applied in the development of new e-government applications. Adequate attention should be paid to raising the awareness and knowledge among public authorities responsible for IT procurement with regard to best practices in IT public procurement and on technical areas (e.g. FOSS; interoperability standards, etc.). The mix of strategies chosen must be adapted to the specific circumstances in each country.

Governments of countries with a nascent IT services sector should at least consider implementing the essential strategies (including establishing the basics, promoting good procurement practices, developing the capacities of local firms and public officials, and providing targeted preferential treatment for local suppliers). Implementing one or two carefully designed e-government projects with the involvement of domestic SMEs can help to showcase their potential and to build trust between the public and private sectors.

In countries with more mature capacities in the local IT sector, and with robust public procurement systems in place, more sophisticated strategies may generate positive impacts. One example might be promoting a national e-government architecture that is modular, open and reusable. E-procurement represents another option to make bidding processes more open and transparent.

The practical implementation of various strategies may require interventions not only at the macro level

but also at meso and micro levels. Involving the local IT industry association in the mapping of the local sector or in public-private dialogue are examples of significant meso level interventions. Micro level interventions, such as training of enterprises in the areas of FOSS, procurement procedures, quality standards, and certification methods are critical in order to expand the base of IT firms that are equipped to participate in public procurement. The responsibility for encouraging and developing such capabilities should not rely exclusively on national ICT agencies or procurement offices. National IT industry associations should also be invited and encouraged to play an active role.

Donor governments and international financial institutions should take the wider impact of IT programmes and e-government projects on local IT sector growth and competitiveness into account when financing projects in developing and emerging economies. This may, for example, involve the integration of greater flexibility in the procurement processes and the allocation of sufficient resources to develop the capacities of local suppliers. In addition, donors may support strengthening local institutions – e.g. national IT industry associations – that provide training and other services to local IT SMEs. They may also commission further research in this area to assess the impact of different policies and strategies.



1. INTRODUCTION

KEY MESSAGES

A dynamic local ICT sector contributes to economic growth in two ways:

- The ICT sector itself contributes to GDP.
- Firms in other sectors as well as public sector organizations and individuals have greater opportunities to use ICT productively when locally based firms can provide relevant ICT products and services at affordable prices and in a timely manner.

Within the ICT sector, the IT services industry provides the largest opportunities for market entry as well as returns on investment in developing and emerging economies. Some IT services are knowledge- and skill-intensive; the required capital investment is comparatively low and does not constitute an entry barrier as in other ICT industries (such as ICT manufacturing or telecommunication services).

In most developing countries with a nascent IT industry, providing services for the local market is often the most natural entry point for new enterprises. Entry into international markets requires additional capabilities.

At the same time, the government is often the largest buyer of IT services. Because of this, public sector procurement of IT services can have a major influence on the evolution of the local IT services industry.

Taking into account the strategic importance of public demand, particularly in the early stage of the IT services industry, governments should consider the impact their public IT investments and related public procurement may have on the development of local IT firms.

It is widely acknowledged that the information and communication technology (ICT) sector functions as a growth engine in many economies. A thriving ICT sector drives private sector productivity and competitiveness, creates employment and spurs innovation. Recent studies confirm that also in low- and middle income countries, a functioning ICT sector contributes to economic growth. As a result of technological change and new business models, many employment opportunities are emerging in this sector also in low-income countries (UNCTAD 2011b). Consequently, the promotion of a competitive local ICT sector has become a priority for governments in many developing and emerging economies.

While changes in the global landscape, including the internationalization of the production of ICT goods and services, have enhanced the scope of exporting such products, the domestic market remains the focus for most local ICT firms in developing countries. However, the adoption and use of ICT by the private sector is often limited, making domestic demand by the government crucially important for the sector to develop. This role is accentuated with the increasing deployment of e-government services, which require the supply of a variety of ICT goods and services.

This report places the spotlight on how public procurement can be used among other tools to promote a more competitive local IT sector. Its analysis and findings are aimed at:

- Policy makers, policy advisors and government auditors in developing and emerging economies entrusted with promoting the local IT industry.
- Public procurement specialists and legal experts tasked with advising and revising the legal framework on public procurement.
- Government Chief Information Officers, who are responsible for maintaining and upgrading IT services within the public sector, as well as public sector personnel responsible for the development, deployment and operation of e-Government services.
- Donor agencies supporting IT deployment and utilization in developing countries that, in line with the Accra Agenda for Action, are committed to *“help improve local firm’s capacity to compete successfully for aid funded procurement”* (art. 18)¹.

The structure of the report is as follows:

- Chapter 1 outlines the importance of developing a local ICT sector, in particular the IT services

industry (including software development), and the role of the public sector as a key buyer of IT services.

- Chapter 2 briefly examines the structure of ICT sectors in developing and emerging economies and identifies opportunities and challenges faced by local IT firms associated with public sector procurement.
- Chapter 3 discusses strategies that governments and the public sector can develop and execute to promote local IT firms through public sector procurement.
- Chapter 4 further examines these strategies through three country case studies (Kenya, Senegal and Sri Lanka).
- Chapter 5 summarizes the main findings and presents key policy recommendations.

1.1 IMPORTANCE OF A DYNAMIC LOCAL ICT SECTOR

Various macro and micro level studies have concluded that the productive use of ICT results in, among others, higher productivity among individuals, businesses and government, and that it also drives innovation in all sectors (UNCTAD 2009 and 2010). As such, most countries today actively promote the adoption and productive use of ICT.

While the pervasive use of ICT is a key driver of economic growth, the local production of ICT goods and services also has an important economic impact. The performance of the local ICT sector is relevant for two fundamental reasons:

- The ICT sector itself may significantly contribute to GDP. In several developing countries, the ICT sector – comprising a wide array of economic activities ranging from low value-added activities which generally require low skills, such as the distribution of hardware, to skill-intensive high value-adding activities, such as software development – is characterized by relatively high productivity and rapid growth.
- Firms in other sectors as well as public sector organizations and individuals will have greater opportunities to use ICT productively if locally based firms can provide relevant ICT products and services at affordable prices and in a timely manner.

As highlighted by BMZ (2011), nurturing a national ICT sector may contribute to:

- Economic growth
- Increased exports
- Increased investments (as countries with strong IT sectors attract more FDI)
- Employment creation
- Improved competitiveness (including through spill-over effects)
- Innovation
- Branding and repositioning a country's image

The weight of the ICT sector in the national economy varies considerably across economies. In terms of economic value added, there is growing evidence that a wider number of developing countries are benefiting from local ICT sector growth (UNCTAD 2010 and 2011b):

- In Cameroon, the ICT sector has been making a vital contribution to an otherwise relatively stagnant economy. Between 2000 and 2008, it grew annually between 15% and 46% (Nzépa et al 2011).
- In Egypt, the ICT sector's value added reached \$5.6 billion in 2009, corresponding to 3.8% of GDP. Moreover, in 2009, it recorded the highest growth rate of all industries in the country (El-Shenawy 2011).
- In India, the contribution of the ICT sector towards GDP rose from 3.4% in 2000/01 to 5.9% in 2007/08, with a compound annual growth rate above 20% for this period (Malik and Mundhe 2011).
- In Malaysia, the ICT sector contributed about 9% towards GDP in 2007; a decline, however, when compared to the beginning of the decade when sector contribution was 11.4%. (Ramasamy and Ponnudurai 2011).
- In Brazil, the evolution of the ICT sector in the recent decade fluctuated with a contraction at the beginning of the decade followed by rapid growth. On average, between 2000 and 2007, it grew at an average rate of 2.1%. At the end of that period, it accounted for approximately 5% of total business sector value added (Porcaro and Jorge 2011).

In employment terms, the sector carries particular weight in countries with a sizeable ICT manufacturing sector (e.g. Malaysia, the Republic of Korea, and Singapore), as well as in countries which are large exporters of IT services and ITES² (e.g. Egypt and Mauritius). The ICT sector typically accounts for a larger share of value added than of employment, reflecting relatively high capital-intensity (UNCTAD 2011). Nevertheless some subsectors of the ICT sec-

tor like the IT service industry (see chapter 1.2) are very skills-driven and less capital intensive.

1.2 THE FOCUS OF THE REPORT: THE IT SERVICES INDUSTRY

The OECD's 2006-2007 ICT sector definition³ identifies ICT economic activities/industries as those whose production of goods and services are "primarily intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display" (OECD, 2007). The OECD ICT sector classification⁴ identifies three groups of industries: ICT manufacturing, ICT trade, and ICT services; which are subdivided into various sub-groups (see Table 1).

Table 1. OECD 2006-2007 ICT sector definition based on ISIC rev.4

ICT manufacturing industries	
2610	Manufacture of electronic components and boards
2620	Manufacture of computers and peripheral equipment
2630	Manufacture of communication equipment
2640	Manufacture of consumer electronics
2680	Manufacture of magnetic and optical media
ICT trade industries	
4651	Wholesale of computers, peripheral equipment and software
4652	Wholesale of electronic and telecommunications equipment and parts
ICT service industries	
5820	Software publishing
61 Telecommunications	
6110	Wired telecommunications activities
6120	Wireless telecommunications activities
6130	Satellite telecommunications activities
6190	Other telecommunications activities
62 Computer programming, consultancy and related activities	
6201	Computer programming activities
6202	Computer consultancy and computer facilities management activities
6209	Other information technology and computer service activities
} IT Services	
631 Data processing, hosting and related activities; Web portals	
951 Repair of computers and communication equipment	
9511	Repair of computers and peripheral equipment
9512	Repair of communication equipment

Source: OECD, 2007.

This report focuses mainly on the IT services industry, comprising computer programming, consultancy and related activities (sub-group 62) and data processing, hosting and related activities and web portals (631) as these activities are expected to provide the most opportunities in the context of public procurement in the IT area in developing and emerging economies.

As discussed in BMZ (2011):

- The IT equipment/hardware industry (sub-groups 2610, 2620, 2630, 2640 and 2680) is capital-intensive and dominated by large multinational corporations (MNCs). Local hardware companies in most developing countries outside East Asia are mostly engaged in sales and distribution. Thus, the value added of this segment in these economies is generally low when compared to IT services (sub-group 62 and 631), and its contribution to economic development limited.
- IT services, particularly software development, are more knowledge- and skill-intensive. The required capital investment, including hardware and software development tools, is comparatively low and does not constitute an entry barrier as in other parts of the ICT sector (notably ICT manufacturing or telecommunication services).

In the remainder of this report, the term “IT services” will be used to refer to sub-groups 62 and 631. An important subcomponent of this category concerns the production of software products and services. Actually, a number of firms in the 5820 (software publishing) sub-group may well be firms that are also active in the 62 sub-group (i.e. those that create and market their own software). Additionally, firms in the 62 sub-group, may also be active in the 9511 (repair of computers and related equipment) sub-group.

The telecommunications industry (sub-group 61) will be covered only peripherally. This is not because telecommunications are unimportant. On the contrary, their importance for growth and employment in developing countries is well documented, and the wide availability of specific mobile phone platforms are opening up opportunities for local software developers to enter the mobile phone software application mar-

ket, as highlighted in the Information Economy Report (UNCTAD 2012a). However, in the specific instance of government procurement, the opportunities for local firms in telecommunications are relatively limited.

1.3 THE PUBLIC SECTOR AS A KEY BUYER OF IT SERVICES

In most developing and emerging economies with a nascent IT industry, providing services for the local market is often the natural entry point for new enterprises. Entry into international markets requires additional capabilities – for instance, in terms of resources or quality certification. In addition, in many developing countries, the government is the largest buyer of IT services. The recent deployment of e-services in the areas of e-government, e-health, and e-learning – frequently financed or co-financed by donors – is boosting such demand. The growing promotion and adoption of e-procurement⁵ and open government⁶ platforms will further expand public sector demand for IT services (including software). It may as well increase public scrutiny of how public funds are spent, including IT services.

There is a general shortage of data on the public sector’s spending on IT in developing and emerging economies. What little data that exist, however, underpins the assertion that public sector demand is crucial for the promotion of IT services industries. For instance, the results of IT industry surveys in Bulgaria, Guatemala, Honduras and Macedonia (BASSCOM 2011, SOFEX 2011, AHTI 2011, MASIT 2011) show that, in all these countries, the public sector is among the largest buyers of IT services.

Given the strategic importance of public demand, particularly at an early stage of IT industry development, governments should consider the impact that their level of public IT investments and the design of public procurement have on the development of local IT firms. To this end, chapter 2 examines specific advantages that local IT services SMEs enjoy, and the challenges they may face in supplying IT services to the public sector.



2. OPPORTUNITIES AND CHALLENGES FOR THE LOCAL IT SERVICE INDUSTRY TO SUPPLY THE PUBLIC SECTOR

KEY MESSAGES

Most IT services firms in developing and emerging economies are producing services such as software, reselling, installation, customization and training linked to imported, foreign packaged software and various kinds of IT consultancy services for the domestic market.

The increasing deployment of e-government initiatives and the associated demand for IT services represent a key market for such firms. The main opportunities for them to participate in public procurement tenders exist in:

- Projects requiring local language, local presence or local-foreign partnerships
- System integration contracts
- Bespoke IT systems
- Low-value contracts

However, the participation in public tenders of local IT SMEs – which have fewer resources and products/qualities that are less well known by public sector officials – is particularly challenged by:

- The technical complexities of IT procurement (such as legacy or lock-in issues)
- The lack of IT standards and interoperability frameworks
- Inadequate procurement frameworks and weak procurement capacities
- The use of previous experience or bid/performance requirements to mitigate procurement risks
- The restricted access to tender notices, either because of their cost or their limited publication

The primary aim of public procurement is to obtain value for money. This is best served by having a reasonably large number of firms – local and international – competing in the tendering process. Some measures can be used to promote the participation of local IT firms in public tenders while maintaining a competitive environment.

This chapter examines the specific advantages and resulting opportunities that local IT services firms, especially small- and medium-sized enterprises (SMEs), may have – in comparison to large and well-established local and international firms – in supplying IT services to the public sector. The prospects for local firms to deliver services in response to public sector tenders are the greatest in relatively small projects, bespoke systems, systems that require customization to the local context, or in projects that require local partners.

The chapter then looks at reasons why seizing such opportunities can often be difficult under existing government procurement practices. The limited adoption of good procurement processes and insufficient procurement capacities are among the main challenges faced by local IT services firms. Requirements related to having previous project experience and sufficient financial resources and challenges related to the specific complexity of IT procurement, such as technological lock-in or interoperability issues, also limit the participation of smaller and newer players.

To provide an explanation of the context in which these opportunities and challenges arise, the analysis starts with a brief description of the nature of the ICT sector and, in particular, the IT services industry in developing and emerging economies.

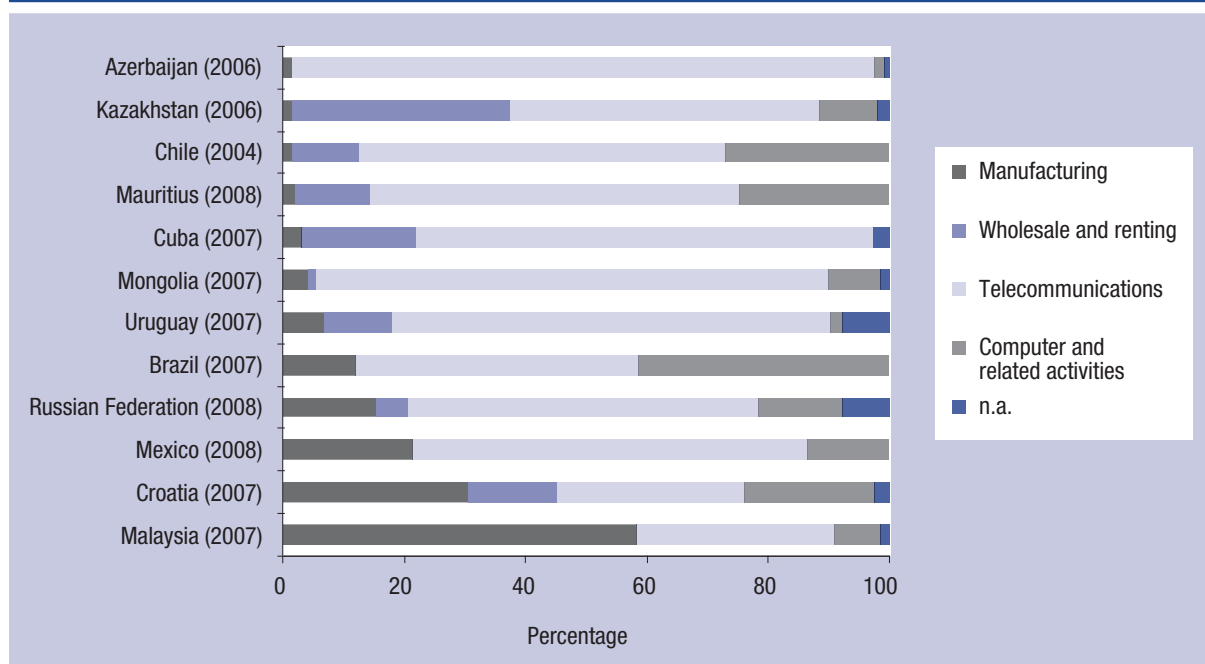
2.1 SIZE AND COMPOSITION OF THE ICT SECTOR IN DEVELOPING COUNTRIES

There are only a few studies that estimate the size of the ICT sector in developing countries. Only a limited number of countries have adopted international standards in reporting on the size or composition of the sector, let alone on the public procurement of IT services.

Nevertheless, the available data unveils some of the characteristics of the ICT sector in developing and emerging economies. The composition of the ICT sector differs considerably across countries (see Figure 1). *Telecommunications services* in developing countries account, broadly speaking, for the most significant share of ICT sector value added. *ICT (goods) manufacturing* represents a small proportion in all but a few developing countries that are primarily found in East and Southeast Asia. IT services (in figure 1 entitled computer and related activities) represent a significant proportion in most economies included in the chart. At the same time, private sector data shows that computer software and services account for a higher percentage of the total ICT expenditure in developed than in developing countries.⁷

Exports of *Computer Software and Information Services* generally account for a higher percentage of

Figure 1. Value added of the ICT sector by main components, selected economies, latest year (in percentage)



Source: UNCTAD (2011b).

Table 2. Types of enterprises in the IT service industries of developing countries

Type of enterprise	Description
Producers of own software products	Can be separated into three subcategories: producers of standardized business products, R&D-based products and embedded systems products.
Software resellers and support providers	Typically act as agents or resellers for other software suppliers, such as proprietary packaged software. Support can range from installation and maintenance of the software to sophisticated consultancy and customization work. ICT trade industries
Software service providers	Develop software for others by offering consultant or development services.
IT and business consulting firms	Tend to focus on the customization of software, training and consulting on enterprise-level software solutions, be localized and relatively small in size.
IT service providers	Include Internet service providers and application service providers. Their role increases with a growing reliance on web-based and cloud-based software applications. These companies may offer access to their networks, systems and applications

Source: Rizk and El-Kassas (2010).

GDP in developed than in developing countries. Some developing countries, however, have managed to generate significant IT services exports, such as Costa Rica (3.6% of GDP), India (2.4%), the Philippines (1.2%) and Sri Lanka (0.6%) (UNCTAD 2012a). This suggests that pursuing strategies for export-oriented software and information services can pay off. At the same time, from a development perspective, it is very important to develop a competitive IT industry to support the IT needs of the domestic private and public sector (UNCTAD 2012a).

Traditionally, the ICT sector has been dominated by large public and (predominantly) private corporations, particularly in capital-intensive areas. However, there are also important opportunities for smaller businesses – especially as hardware becomes less of a factor in the ICT industry – and many new job opportunities have emerged for ICT SMEs (UNCTAD 2010 and 2011b).

In developing countries, the following types of enterprises can be distinguished in the IT services industry: software resellers and support providers; software producers; software service providers; IT and business consulting firms; and other IT services providers (Rizk and El-Kassas, 2010; Roeding et al., 1999) (Table 2). In many developing countries, in particular LDCs, most domestic IT enterprises belong to the category of software resellers and support providers and other IT service providers (UNCTAD 2012a).

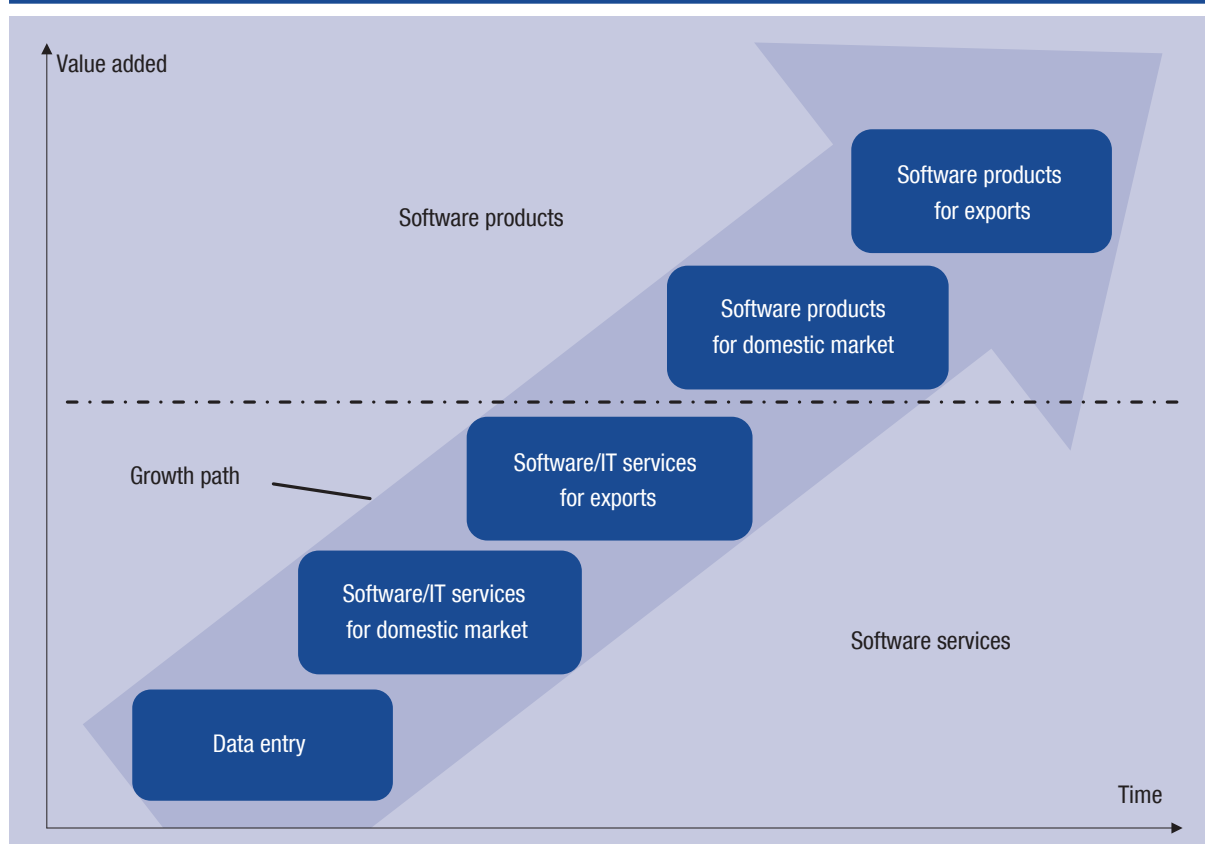
In practice, many firms provide services in more than one category and may also move between them. It is common for local IT firms to start by representing a foreign vendor as a local reseller of products and support, and then seek to move up to the next level by becoming producers of their own software (UNCTAD 2012a).

The opportunity for value creation for IT services firms varies according to the nature of the activity (data entry, software/IT services or software products) and market orientation (domestic or export sales). Figure 2 represents these different products and services and markets according to their level of value creation and along a typical timeline.

For most IT services firms in developing countries, producing services for the domestic market – such as reselling, installation, customization and training linked to imported, foreign packaged software – is the natural entry point with the lowest entry barrier (Heeks, 1999). A key inhibitor for expanding activities towards software development, and thus moving up the value chain, has traditionally been a lack of technological capabilities combined with limited use of ICTs and demand for software applications in the private and public sector.⁸

Producing software and other IT services for exports requires greater capabilities. Relatively few firms from developing and emerging economies – such as firms from India and the Philippines – have managed to enter this market, although the number is increasing.

The production of application packages involves high barriers to entry and is subject to intense competition. Since few places are insulated from foreign competition, domestic firms have to compete with imported proprietary software, often developed and disseminated with the backing of sizeable budgets for research and development, advertising, sales and marketing. The main opportunity to move into software products typically lies in the development of applications tailored to local conditions (e.g. business culture, legal framework and languages).

Figure 2. Value added in software and other IT services

Source: UNCTAD (2012a), adapted from BMZ (2011).

Several key trends in the IT industry offer opportunities for IT services SMEs in developing and emerging economies to participate in higher value added activities:⁹

- Rising demand for offshore and outsourcing services.
- Increasing adoption of component-based software engineering, which provides opportunities to participate in global value chains by specializing in the production of specific components.
- Increasing use of free and open source software (FOSS).
- Growing market for mobile applications.

2.2 OPPORTUNITIES

As argued in chapter 1, given the relatively low use of software amongst consumers and businesses, and the difficulty in entering the consumer market (which is dominated by off-the-shelf applications by established global competitors), the public sector constitutes an

important and strategic market for local IT services firms.

This section examines areas where markets exist for local IT services firms and where these – depending on their business segment and capabilities – may have an advantage over foreign firms.

2.2.1 E-government

Information technology is instrumental for the public sector to fulfil its mission efficiently, cost-effectively and transparently (Bhatangar et al 2007; Ciborra and Navarra 2005; among others). Consequently, many developing countries have embarked on initiatives aimed at re-engineering and automating government processes, and providing electronic services to citizens and businesses. The latest United Nations E-Government Survey (United Nations 2012) found that the sustained integration, expansion, and consolidation of government online offerings has led to more than a 10 per cent increase in the world average of e-government development in the past two years.

The increasing deployment – even if only moderate – of e-government services in developing countries expands the domestic demand for IT services and offers market opportunities for local firms.

2.2.2 Local language capabilities

Local firms have a distinct advantage when IT systems require the use of local languages. E-government applications, for example, may require local language user interfaces as well as corresponding character sets and storage capabilities. In addition, command of the local language may be crucial when interacting with users, government officials, and other stakeholders during the development, deployment and maintenance of IT systems. Furthermore, local language capabilities may be required for the preparation of user manuals and for carrying out training to rollout a system. Needless to say, local firms are more likely to be familiar with local languages as well as with locally rooted communication patterns. These factors are advantageous for local firms to respond successfully to public tenders, either alone or as a partner to bidding international firms.

2.2.3 Local presence requirements

Occasionally, having a local presence throughout the country is required for the deployment, operation and maintenance of public sector IT systems. Such requirements can often only be fulfilled by local firms, particularly the larger ones that either possess their own networks of regional offices or are in a position to establish a presence swiftly. For foreign firms – especially those without any local presence – establishing a regional presence may not be straightforward or cost effective. In such cases, local IT firms, including SMEs, may function as partners either for large local firms or for foreign firms.

2.2.4 Partnering with foreign firms

Collaboration between local and foreign IT firms may be required, if not mandated, by public sector procurement rules. Areas in which voluntary partnerships are often established include on-site technical and user support after IT systems have been deployed. Although the value adding activities by local firms may be limited, some amount of technical knowledge transfer usually takes place. If partnerships continue beyond single contracts, for similar systems and/or in more than one public sector organization, the amount of value added activities carried out by local firms may increase over

time. Moreover, continuous partnerships with foreign firms can provide local firms with valuable insights into the operations of their foreign partners, be it in using the latest software development methodologies and tools, or in managing projects and customers.

2.2.5 Local firms as system integrators

Even when local firms lack the expertise in domain-specific software, integrating, or partially integrating, systems is an activity that they might carry out. While various international firms provide the licenses for the different software components of a full-fledged system, local firms may be called upon to integrate these components into a fully functional system. Depending on the system, integration may range from low to high value adding activities. In any case, the opportunity to gain experience with system integration can benefit local firms and help them develop their skills while at the same time adding references needed to be able to qualify for future bidding.

2.2.6 Bespoke IT systems

International firms have often developed their competencies on specific products and services in response to the needs of the public sector in developed countries. Therefore, the level of functionality and complexity inherent in their products is usually high, which tends to be reflected in the price structure. The public sector in many developing countries usually has simpler requirements and more limited budgets. Simpler products, customised to their requirements, may therefore often be the preferred choice. The need for such bespoke systems therefore provides opportunities for local firms – provided local expertise and capabilities are available.

2.2.7 Low value contracts

Occasionally, IT systems tendered by the public sector in developing countries require only basic functionality and have thus a contractual value that may be uninteresting for international firms. This gap in bidders leaves the field open for local SMEs.

2.3 CHALLENGES AND BARRIERS

While there are several instances where local IT firms can compete or collaborate with large national and international firms in response to public sector tenders, reality suggests a different picture. As illustrated in

the country case studies (see Section 4 and Annex 1), many local IT services SMEs fail to even submit a bid, let alone to be awarded and successfully fulfil a contract.

This section examines some of the main challenges and barriers local firms face when bidding for public sector IT tenders.

Many barriers that exist for local IT services firms with regard to public sector tenders can be explained by:

- The specific complexity of IT procurement.
- The lack of interoperability of IT systems.
- Inadequate procurement frameworks and weak procurement capacities.
- Information asymmetries in procurement.
- Lack of awareness by procuring entities and local IT sector.
- Additional transaction costs associated with the adoption of measures addressing information asymmetries.

2.3.1 Complexity of IT procurement

The public procurement of IT products and services is often a complex process. The characteristics of IT systems (such as the wide range of available standards or the short innovation cycles) make their procurement particularly challenging. Some of these challenges include eliciting user requirements, managing lock-in and legacy issues, and ensuring the interoperability of systems.

The identification, selection, and phrasing of technical specifications for IT services requires sound knowledge of technologies and good procurement practices by IT managers and procurement officers. The lack of such knowledge may result in unclear specifications issued along tender notices.

Lock-in situations where ties to the original vendor extend beyond the initial contract period either for technical (e.g. the need to adapt interrelated systems) or institutional (e.g. the associated costs of retraining staff to work on the new IT system) reasons are particularly harmful for local companies, especially when they are late entrants in the market.

2.3.2 Lack of interoperability of IT systems

The interoperability of IT systems – i.e. the ability of IT systems to communicate with each other and share data – is a primary concern in IT procurement. Full or

partial interoperability can be mandated in tenders by prescribing certain standards. Unless these standards are protected by intellectual property rights owned by one market player or consortium, this not only facilitates interoperability, but also stimulates competition. The definition and prescription of standards have varying effects on interoperability and competition, depending on their degree of openness and complexity. The degree of openness affects the number of firms that have the rights to use them (Europe Economics 2012). The complexity and, thus, ease of implementation has an impact on the number of local firms possessing the capability to apply them.

2.3.3 Inadequate procurement frameworks and weak procurement capacities

Inadequate public procurement frameworks are another challenge that local IT services SMEs face. These failures are often general public sector procurement limitations, not exclusive to IT procurement, and their redressing requires a wide range of measures. Moreover, the lack of clear policies in areas related to the procurement of IT services, ambivalent legislation and regulations, and shortcomings in public sector coordination (e.g. absence of interoperability frameworks) are examples of institutional constraints that can inhibit the participation of SMEs in public sector tenders. Generally, smaller firms are financially and organizationally poorly equipped to understand and navigate through complex and opaque procurement procedures.

Public sector organizations in developing countries often have inadequate procurement capacities, particularly with regard to the procurement of IT services. For instance, the identification of the IT-related standards to be included in the requirements catalogue for target systems requires adequate knowledge of such standards. In addition, procurement officers and other officials often need to become acquainted with and apply the procurement processes and rules of different international donors financing IT programmes, which stretches their capacities.

2.3.4 Information asymmetries in procurement

Public sector procurement officers often have limited knowledge of the quality of IT products and services offered by potential bidders. In order to minimize the

risks involved when procuring goods and services, the public sector usually imposes a variety of rules, which includes requiring:

- Bidding firms to have previous experience in successfully delivering services of a similar nature and similar size (e.g. e-filing of tax returns). In larger tenders, this automatically disqualifies local SMEs which may, at best, have implemented only small projects in the past. Even large local firms may not possess previous experience in the specific domain, especially if it is the first time the public sector is tendering for IT services in the particular domain.
- Bid and/or performance guarantees or bonds for tenders above a certain value. Bid and performance guarantees are usually financial collateral requested by the public sector (awarding party) from successful bidders to ensure that bidders, once under contract, will carry out the project and complete it as per the contractual agreement. Such guarantees are often provided by guarantors – e.g. in the form of bonds issued by an insurance company or a bank – in favour of the awarding party. Guarantors generally require contractors to deposit the equivalent amount of money (or other collateral), thus tying up contractors' assets. SMEs in particular may be unable to provide enough collateral for the duration of the project. Credit scoring systems or cash-flow based lending mechanisms, which can enable banks to issue bonds without tying up firms' assets, are less prevalent in developing countries.

Such rules, which aim at mitigating the risks from information asymmetries in procurement can create a vicious cycle, where local firms (especially SMEs) that have not previously done similar work or have limited collateral are unable to even qualify for a tender. Without winning at least one tender, they are then unable to gain the necessary experience to bid the next time the public sector issues a new tender.

2.3.5 Lack of awareness in procuring entities and local IT firms

Procuring entities are in general unaware of the broad set of skills and capabilities available in the local IT sector. The lack of data available on the capabilities of the local IT sector as well as the limited dialogue with the local IT sector have helped sustain widespread preconceptions of the quality of services provided by SMEs.

Local SMEs are often unaware of opportunities to tender for public sector projects, because:

- Tender notices (e.g. expressions of interest, requests for proposals) are published in publications that they usually do not access.
- The cost of obtaining bid documents is too high.
- The public sector simply does not invite smaller local firms to bid.

Such information gaps may often be aggravated by weaknesses in public procurement processes mentioned earlier in section 2.3.3.

2.3.6 Additional transaction costs

There are various means to minimize the information asymmetries highlighted above in order to reduce the barriers for SMEs, such as:

- Accepting proof of quality other than previous work (e.g. quality certifications).
- Encouraging modular designing and breaking up tenders for IT services correspondingly.
- Concessions on bid and performance guarantee requirements.

Many of these solutions, which will be discussed in more detail in chapter 3, impose additional costs on either the buyer, or the supplier, or both. In the case of certifications as proof of quality, the costs of obtaining and maintaining such certificates are borne by the supplier. In the case of breaking up an IT system into smaller components and procuring each component separately, the costs increase for the buyer who has to manage multiple contracts instead of (ideally) only one. Furthermore, technically seasoned staff are required on the buyer's side to ensure that the separate parts harmonize.

2.4 RECONCILING IT SECTOR PROMOTION WITH VALUE FOR MONEY IN PROCUREMENT

The primary aim of public procurement is to obtain value for money. Procurement entities are tasked with procuring systems that fulfil the technical specifications at the lowest total cost of ownership. This is best served by having a reasonably large number of firms – local and international – with experience and relevant products and services competing in the tendering process. Procurement entities are generally not entrusted with ensuring that local SMEs submit bids and are given a chance to deliver.

Table 3. Overview of potential strengths, weaknesses, opportunities and threats of local SMEs in public procurement of IT services.

Strengths	Opportunities
Local language skills Local presence Flexibility to bid for systems of low financial value	E-government and e-procurement Partnering with foreign firms Local firms as system integrators Bespoke systems Collaboration with other enterprises
Weaknesses	Threats
Lack of previous experience in public procurement Lack of means to sustain bid and performance guarantees Limited procurement capacities by firms Focus on low value added activities	Ineffective procurement frameworks and processes (including unsupportive policies, unclear regulations, lack of public sector coordination) Inadequate implementation of tendering processes Limited procurement capacities in the public sector Technology/vendor lock-in Lack of IT standards and interoperability frameworks Lack of modular systems and open e-government architectures

Source: UNCTAD and BMZ.

The aim of promoting local IT firms may at first glance appear to be in conflict with the aforementioned goal. Giving preference to local firms may require imposing barriers to foreign firms, which may result in fewer qualified firms competing for the tender. Moreover, local firms might view such barriers to foreign firms as an opportunity to provide mediocre products and services. Such implications would serve neither the interests of the public sector, nor the general public, nor those of the local firms. Reducing competition among bidders by setting up artificial barriers will likely reduce local firms' incentives to innovate and to become competitive, reducing their chances to compete in international markets in the future.

It is therefore vital to acknowledge such conflicts of interests and to develop strategies suitable for the specific circumstances within each country. Countries where IT industries are underdeveloped may need to adopt strategies that, for example, require

international firms to collaborate with local firms, instead of strategies that outright exclude foreign firms.

The goals discussed above may be mutually reinforcing when considering long-term implications. Every local firm that wins a public tender (because of adjusted public procurement policies that encourage local participation) is one more potential competitor in future tenders. If such promotional policies are not implemented in the short term, local firms may never be able to qualify for more advanced projects in the future. The public sector would thus be forced to continue to rely on foreign suppliers in the long run, which may, among others, also result in sustained higher costs in future.

Table 3 presents a SWOT analysis of the main strengths, weaknesses, opportunities and threats to local firms' participation in public procurement of IT services.



3. PROCUREMENT STRATEGIES FOR PROMOTING THE LOCAL IT SERVICES SECTOR

KEY MESSAGES

Governments can implement a combination of procurement strategies to promote the local IT services sector, including:

1. Establishing the basics.
 - Making sure that public procurement is aligned with IT sector promotion strategies
 - Ensuring there is a critical mass of IT-related procurement
 - Understanding the current state of the local IT services industry
2. Strengthening the institutional framework.
 - Coordinating across the public sector and the industry
 - Designating a lead agency to spearhead public procurement for local IT sector development
3. Promoting good procurement practice.
 - Establishing transparent and open tender procedures
 - Deploying e-procurement systems
4. Limiting market entry to foreign bidders.
 - Providing preferential marks for local experience, local language and local presence
5. Mitigating information asymmetries.
 - Making concessions on bid and performance guarantee requirements
 - Accepting proof of quality other than previous work
6. Promoting software design that facilitates local firms' participation.
 - Prescribing open standards and interoperability frameworks
 - Adopting the modular design of IT systems in the public sector
 - Promoting FOSS
7. Providing awareness and capacity development for local firms and public sector officials.

This chapter examines various strategies that governments in developing and emerging economies may adopt to strengthen the local IT services sector through public procurement of IT services. Needless to say, all proposed strategies must be balanced and customized depending on the specific country's situation in terms of, for example, its level of institutional capacity or IT industry sophistication.

3.1 ESTABLISHING THE BASICS

A key requirement to foster the participation of local IT services firms is to ensure that IT procurement strategies are coherent – that is, that they fit wider IT sector promotion policies and take into account the country and sector context.

The following sub-sections propose a set of activities that policy makers should consider carrying out before developing and implementing procurement-related IT sector promotion strategies.

3.1.1 Public procurement as part of IT sector promotion strategies

A suitable public IT procurement strategy cannot be developed without taking related strategies into account. These include, but are not limited to, economic and social development strategies, high-level IT and information society strategies, and e-government strategies. Public procurement strategies should be aligned with, if not integrated into, these strategies.

Leveraging public procurement is one among many policy measures that can be applied to promote local IT services firms. BMZ's Manual for IT Sector Promotion (2011) identifies five sets of intervention measures for promoting the IT industry (see Box 1).

It is important to understand the role of public procurement in combination with these other policy measures, such as the promotion of IT networks, human capacity development, financing of innovation, or promotion

Box 1. Five areas of intervention for promoting the IT industry.

The BMZ IT Sector Promotion Manual and Toolbox outline a strategic approach to IT sector promotion in developing countries. The methodology is based on a modular approach comprising **five sets of intervention measures for promoting the IT industry** in developing countries:

1. **IT strategy development** – to bring together all relevant stakeholders and help define policies, measures and actions to increase the IT industry's international competitiveness;
2. **The promotion of IT clusters and networks** – to support collaboration in the IT sector and the improvement of systemic competitiveness;
3. **The advancement of capacity development and training** – to tackle general deficiencies in the IT education and training system, insufficient capabilities and skills on the company level and the lack of institutional capabilities in the public sector to support the IT industry;
4. **Export promotion** – including the development and implementation of export-oriented strategies and the development and implementation of concrete, specialized export promotion measures for the local IT industry such as information and advisory services or cluster marketing; and
5. **Domestic market development** – to open up the growth potential of domestic markets to local IT companies, thus creating an additional source of income and revenue streams, and **local innovation** to promote new, IT-related products, services and processes that improve the innovation capacity and competitiveness of other domestic industries.

The manual and the toolbox promote **an integrated approach** for IT sector promotion in developing and emerging economies based on the following three pillars:

- Promoting *systemic competitiveness*, where all relevant stakeholders on the three systemic levels (i.e. the so-called *macro, meso and micro* levels) are included in the design and implementation of IT sector promotion measures.
- The use of a *cyclical model* where, through iterative development phases, feedback and suggestions from different stakeholders as well as the results of monitoring and evaluation continuously feed into IT sector promotion measures.
- Using a *modular structure* to allow stakeholders and project teams of IT sector promotion to adjust the sequence and intensity of the support measures to the specific needs and conditions.

Collaboration is recognized as a crosscutting element. Collaboration and close interaction between stakeholders is needed to design and implement viable support measures for the local IT industry, to allow exchange of relevant information, knowledge transfer and capacity development.

Source: BMZ (2011).

tours to potential export markets. If such measures are deemed to be more effective, they should be prioritized.

3.1.2 Critical mass of IT-related procurement

Developing procurement strategies targeting the promotion of local IT firms makes more sense if a critical mass of tenders in this area is expected. Forecasts for tenders that include IT services therefore provide useful information.

3.1.3 Understanding the current state of the local IT services industry

Before embarking on the development of procurement strategies for the IT sector, policy makers should analyse the current state of the IT sector in their country. A SWOT analysis may be useful to identify the core strengths and competencies of the local IT services industry and the type of IT services that it may be able to provide. This would also address the lack of awareness of public procurement entities on local capabilities (see 2.3.5).

Since it is likely that comprehensive and up-to-date data on the local IT sector are unavailable at this point,

it will be necessary to conduct a survey in cooperation with the private sector, ideally through its associations. In this regard, GIZ's IT Industry Barometer can be a useful tool to gather information on the local IT sector (see Box 2). A detailed description of how to carry out an IT company survey is available in BMZ (2011).

3.2 STRENGTHENING THE INSTITUTIONAL FRAMEWORK

3.2.1 Coordination across the public sector and the industry

The public sector's demand for IT goods and services evolves with the innovation cycles in the IT sector. Existing procurement strategies therefore need to be regularly updated, based on a dialogue between the public sector and the IT sector. Both the domestic as well as the international competitiveness of local IT industries are most effectively improved if all relevant stakeholders cooperate in strategy formulation and implementation. In this regard, it is essential that stakeholders on the three systemic levels – macro, meso and micro – are included in the dialogue.

Box 2. The IT Industry Barometer

The IT industry barometer (ITIB) is a tool developed by GIZ to gather and analyse quantitative and qualitative information on the performance of an IT industry and to identify relevant IT industry trends.

ITIB supports IT sector promotion initiatives by:

- Helping to monitor and evaluate the performance of the IT industry.
- Providing accurate statistical information on the IT sector and allowing informed decision-making and better planning – particularly important for developing and emerging economies where reliable statistics on the IT industry are often not available.
- Serving as an “early warning system” for the IT industry.

The barometer is elaborated based on the results of a business survey of IT firms covering the following subjects:

- General information
- Statistics
- Human resources
- Forecast
- Current issues and comments

The survey is conducted electronically using an online survey tool. The questionnaire is designed to allow for easy and swift answering by IT companies. Information on individual companies is kept strictly confidential, since the results of the survey are only published in aggregated form.

The data collected through the survey are then analysed and used to prepare an IT industry report, which provides concrete information about the industry and identifies relevant market and industry trends. The report constitutes a foundation for the formulation of appropriate support measures for the IT industry.

Source: BMZ (2011).

- At the **macro level**, public sector organizations should coordinate to set IT and interoperability standards, pool tenders, and design and execute the public procurement strategy. Such organizations include those procuring IT goods and services at the national, regional and local levels of government; the government entity responsible for the supervision of the public administration; and the ministry or agency responsible for the promotion of the IT sector.
 - At the **meso level**, IT industry associations, IT clusters and chambers of commerce play an important role, e.g. by informing firms about tenders – thus mitigating the lack of awareness of local firms (see 2.3.5), training them to respond correctly to tenders, and managing capacity development programs (including certification programs) aimed at developing technical and management capabilities among local firms. Meso level organizations can also help build consortia of local IT firms to respond to large tenders, or to arrange partnership between local and foreign firms. Furthermore, meso level organizations are instrumental when surveying the local IT sector to determine its strengths and weaknesses (see Box 2). An UNCTAD-WITSA survey of 38 national IT/software associations (UNCTAD 2012a) indicates that two-thirds of the associations survey their members, and almost half of them do so at least annually. IT/software associations are also instrumental in supporting national ICT policy formulation. A majority of these associations provide training services but relatively few (a third of the respondents) have been involved in providing services leading to internationally recognized certifications (see Table 5).
 - At the **micro level**, firms (potentially) bidding for public sector contracts require access to tender-related information and an understanding of IT public procurement processes and rules. Firms may actively participate in the identification and definition of IT needs or in the shaping of public procurement processes, e.g. by providing feedback on the experience of such processes. Governments may assume an active role in developing capacities of local SMEs, for example to upgrade their skills or obtain certifications.
- Besides raising awareness, coordination among stakeholders can also result in a decision to share the costs incurred in IT sector promotion activities (as seen above in section 2.3.6). Such costs may be distributed across several projects over time, and may be primarily borne by a designated public sector organization (other than the one involved in the immediate procurement), such as the agency responsible for ICT sector promotion. It may also be partly shouldered by IT associations.
- More formal types of collaboration between public and private actors, such as public-private partnerships (PPPs), have also been used to enable local IT firms to gain experience in delivering services through the participation in public sector projects. PPPs are particularly relevant in the development and administration of IT programmes that, due to their size or critical significance, require important commitments from both the public and the private sector. Such partnerships allow the sharing of risks and rewards.

Box 3. IT public procurement and local IT sector development in Singapore

The Government of Singapore has encouraged local IT firms to develop state-of-the-art solutions for various government branches and has later promoted these solutions on an international level through government-to-government partnerships. In 2008, the Singapore government outsourced IT systems worth \$768 million to the private sector using a PPP approach. The IT firms retain the exclusive right to manage and maintain these systems and to resell the expertise gained to other countries.

Even very basic systems, such as government email, are implemented through this approach. The government owns the email content, sets quality of service standards and indicators, engages in independent performance audits, and pays for the service, while the private sector provider owns the hosting environment, pays for capital and operating costs, and is responsible for the quality of services. Many other government systems in Singapore operate under similar arrangements (e.g. the Lifestyle Portal for the National Services and various trade platforms such as TradeXchange).

Examples of companies that were incubated in this way and successfully became international players include Crimson Logic, IDA International, NCS, novaCITYNETS, and Ecquaria.

Source: Seah Chin Siong, Public and Private Partnership, Singapore's experience, <http://siteresources.worldbank.org/INFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/D1S3aP3-JosephTeo.pdf>

The Government of Singapore has encouraged local IT sector development through the use of PPPs (see Box 3). However, in developing countries with limited local capabilities, PPPs may tend to favour larger local and foreign enterprises with previous experience in this type of collaboration.

3.2.2 Designating a public agency to spearhead public procurement for local IT sector development.

A number of public sector organizations are involved in the procurement of IT goods and services at the national, regional, and local levels of government. There may also be, at all levels, entities responsible for the oversight of the public administration, for the promotion of ICTs for development and of the IT sector. Moreover, rules on public sector procurement at the national level may not necessarily apply to sub-national levels.

Section 3.2.1 discusses a context in which a wide number of public sector organizations participate in public sector procurement, applying different sets of rules. In such a context, coordinating these organizations is crucial to developing and executing strategies targeting the development of local IT industries. One public sector organization may be assigned to function as the coordinating body. This, however, will only produce results if coordination processes are well-governed and transparent. Otherwise, the attempt to coordinate activities among public sector organizations may rather lead to unnecessary bureaucracy and wasteful use of limited resources.

3.3 PROMOTING GOOD PROCUREMENT PRACTICES

3.3.1 Implementing transparent and open tender procedures

Procurement is a government activity that is highly vulnerable to bribery and corruption due to the complexity of its processes and the large financial flows between the public and private sector (OECD 2005). Implementing transparent tender procedures can effectively reduce the risk of fraud and corruption and provide all firms with more equal opportunities to supply the public sector.

Good procurement practice starts at the pre-bidding stage when the public sector develops the require-

ments for the upcoming tender. Undue influence can be exerted at this stage by firms with “special access” to public sector decision makers. Influencing the technical specifications of the tender or the selection criteria is a way to enhance the chances of winning a tender while appearing to participate in a transparent and fair tendering process. The use of standards in technical specifications or the development and adoption of well-designed templates for IT tender documents are possible ways to remedy such shortcomings.

Attention to good procurement practice is essential up to the very end of the process, i.e. until the final payment is made to the contractor. Delays in payment by the public sector can be a major problem for firms, especially to those where the cash flow from contracts feeds a large share of their operational budget. Delayed payments can result in severe liquidity problems and limit the participation of firms with small financial reserves.

Consequently, developing an end-to-end strategy to ensure good procurement practice is critical. A number of internationally established best practices for public procurement in general can be considered in this context (see, for example, OECD, 2009; WITSA, 2004). There are also treaties, laws and conventions applicable at national, regional and international level regarding procurement, such as the United Nations Convention Against Corruption (UNCAC), as well as a reference legislative text – namely the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Procurement of Goods, Construction and Services.

Table 4 provides an overview of good procurement practices based on the OECD’s Principles for Integrity in Public Procurement¹⁰, and WITSA’s Best Practices in Government IT Procurement.¹¹ Some of these practices are particularly important to ensure a level playing field for the participation of local SMEs, including timely and open information and communication on bids, neutral technical specifications based on performance requirements, clear selection and award criteria, detailed feedback to unsuccessful bidders, and timely payments.

The adoption of good public procurement practices requires appropriate rules and regulations, as well as capacity development measures within the public sector. These should focus on enabling designated staff to design processes for IT public procurement of various types of IT goods and services, employing standards, drawing up and using IT tender templates, etc.

Table 4. Good procurement practices: an overview of OECD and WITSA recommendations

Pre-tendering phase	
Needs assessment	<ul style="list-style-type: none"> – Reduce information asymmetry with the private sector. – Use a validation system that is independent from the entity making the final decision.
Planning and budgeting	<ul style="list-style-type: none"> – Align procurement with the overall investment decision-making process. – Establish clear and reasonable time frames for the entire bidding process and apply them consistently. – Budget realistically. – Elaborate detailed business cases for larger projects, as these pose higher risks. – Define responsibilities clearly. – Ensure separation of duties and authorisation. – Ensure that officials are aware of the transparency requirements.
Definition of requirements	<ul style="list-style-type: none"> – Take precautionary measures to prevent conflict of interest, collusion, and corruption. – Make requirement specifications available to all parties. – Ensure that technical specifications are neutral, specific, and based on performance requirements.⁽¹⁾ – Handle requests for information, comments, and proposal in a timely and efficient manner. – Use experience qualifiers (past experience, proven capability in a particular technology/ software development methodology, proven management experience, etc.) as selection criteria. – Ensure an equitable distribution of risks. – Weigh the risks and benefits of having a pre-determined list of suppliers carefully before making a decision to use such a list. – Establish and use one standard of terms and conditions for low risk contracts across all public sector agencies to avoid proliferation of different sets of terms and conditions. – Define selection and awarding criteria clearly and objectively,⁽²⁾ and announce them well before the closing of the bid. Clearly state the economic, social and environmental criteria used to evaluate bidders (e.g. favouring bidders from economically disadvantaged areas, using environmentally-friendly materials, etc.).
Choice of procedure	<ul style="list-style-type: none"> – Provide clear guidance in determining the optimal procurement strategy that balances administrative efficiency with fair access for suppliers. – Take precautionary measures for enhancing integrity where competitive tendering is not required by regulation. Promote a consistent strategy and limit the abuse of non-competitive tendering on the basis of legal exceptions (e.g. contract splitting for the sole purpose of achieving low monetary value contracts, use of extreme urgency, abuse of other exceptions based on a technicality or exclusive rights, and untested continuation of existing contracts).
Tendering Phase	
Invitation to tender	<ul style="list-style-type: none"> – Provide information on the procurement opportunities in a consistent manner: <ul style="list-style-type: none"> • Publish the notice for the invitation to bid publicly • Do not disclose sensitive or non-public information contained in bids to competitors • Set competition levels to avoid inadequate pricing and collusive bidding – Request live tests and demonstrations selectively and allocate sufficient time.
Evaluation and award	<ul style="list-style-type: none"> – Put mechanisms in place to address and oversee conflict of interest and corruption in <ul style="list-style-type: none"> • The evaluation process: mitigate conflicts of interest (e.g. make sure that at least two people always approve a particular activity) • The approval process: put effective measures in place to ensure separation of financial, contractual, and project authority – Ensure security and confidentiality of information submitted. – Define and follow a clear procedure for opening the tender. – Keep formal records of the whole procedure. – Notify the selected bidder promptly and inform and offer debriefing to the losing bidders. – Set up a formal complaints procedure, including referral to higher authorities and to an independent authority.
Post-tendering phase	
Contract management	<ul style="list-style-type: none"> – Clarify expectations, roles and responsibilities for the management of the contract. – Monitor the performance of the contractor to ensure the quality and timing of the process. – Ensure that subcontractors and partners are chosen in a transparent way and kept accountable.
Order and payment	<ul style="list-style-type: none"> – Verify that the receipt of goods/services is in line with expected standards. – Separate duties and/or supervision of public officials to encourage appropriate accounting and payments. – Ensure timely release of funds to make payment against contractual conditions.

⁽¹⁾ Note: Functional or performance specifications do not specify the actual methods, products, design, methods of development or technologies to be used but rather specify the actual functional performance sought by the procuring entity.

⁽²⁾ Note: WITSA (2004) includes also in its definition of fair criteria: “In particular, criteria must treat foreign firms the same as national companies”.

Source: UNCTAD and BMZ, based on OECD (2009) and WITSA (2004).

3.3.2 Deploying e-procurement systems

E-procurement comprises the digitization of public procurement processes and may include one or more of the following processes:

1. E-notification, the publication of tenders and procurement notices on the Internet
2. E-submission, the submission of bids online
3. E-awards, the final selection of suppliers (including e-auctions)
4. E-ordering, the automatic placement of orders online (including e-catalogues and electronic markets)
5. E-invoicing, the provision of electronic invoices
6. E-payment, the online payment of contracts

E-procurement goes beyond simple digitization of processes. It requires the reorganization of business processes and the adaptation of policy, regulatory and administrative frameworks.

The advantages of e-procurement systems are enhanced transparency (transactions¹² between public sector organizations and their contractors are publicized), reduced administrative and bidding costs through streamlining and standardizing procurement processes, and reduced overall tendering costs as a result of more efficient operations and a larger number of potential contractors (Singer et al, 2009).

The benefits of e-procurement for the public sector in terms of cost savings have been researched and documented for some countries. For example, Bik-

shapathi et al (2006) show 20 and 12 per cent cost savings respectively in the 2004 and 2005 financial years in the Indian state of Andhra Pradesh due to an increase in the number of bidders per tender, and savings of \$560,000 a year in tender advertising fees. Box 4 provides examples of the achievements of the e-procurement systems of Chile and Canada. The cost savings and other benefits resulting from e-procurement will largely depend on the individual context.¹³

Despite its potential advantages, e-procurement is not yet common, even in developed countries. In Europe, for instance, e-notification has been widely deployed, but other more advanced and complex features of e-procurement services are less prevalent. By the end of 2010, less than 5 per cent of public procurement expenditure of a set of early adopter countries was conducted electronically (CapGemini et al 2010).

According to the UN-sponsored technical consultation meeting held in the Republic of Korea (UNDESA 2011), the main obstacles to the diffusion of e-procurement in developing countries are:

- Lack of awareness and capacity building programmes, including lack of government policies and legal frameworks and lack of institutional capacity for public procurement
- Reluctance of procurement agencies to adopt e-procurement systems
- Immature IT infrastructure for e-commerce and in-country IT divides

Box 4. Benefits of e-procurement in Chile and Canada

Chile Compra

By 2008, 900 public agencies were trading more than \$5 billion and conducting almost half a million tendering processes over the Internet each year. This generated more than 1.6 million purchase orders, which greatly improved conditions of efficiency and transparency. Businesses have also gained better access to the market, and the number of suppliers doing business with the State has tripled. More than 82,000 businesses place bids and/or are awarded contracts with the State on the Internet each year. Micro-, small- and medium-sized businesses have benefited the most from this new marketplace. Finally, the systems managed by Chile Compra save around \$150 million in public expenditure each year.

Canada Merx

The Government of Canada has moved all public procurement on-line to the so-called Merx procurement system. This system has led to savings of about CAD 6 million a year in photocopying, mail, and courier fees. Moreover, Merx helps reducing the costs of projects by about 10 per cent across the board, while enhancing the quality of submissions by facilitating access to opportunities for a larger number of bidders. Furthermore, the approach has encouraged the private sector to become more competitive and has made the bidding opportunities more accessible to all firms, irrespective of their size. The Merx system has been so successful that the Government funds the subscription cost of any Canadian firm, as the advantages of having more subscribers competing to provide goods and services outweigh the costs of subsidizing these services.

Source: UNCTAD (2011a).

- Lack of cross-governmental coordination: difficulties in legislation and multiple platforms
- Ineffective implementation because of inadequate business process reengineering or the digitalization has not been accompanied by procurement reform
- Cross-border e-procurement barriers: electronic signatures are recognised only domestically.

Supplier adoption is crucial to the success of e-procurement systems (Vaidya, 2006). Awareness, training and capacity development, simplified and standardized procedures, and the provision of advisory services can help local SMEs in submitting bids on e-procurement platforms.

Demand aggregation – various public sector departments grouping their purchases together to enjoy volume discounts offered by suppliers – is occasionally touted as one of the benefits that can be achieved by using a full-scale e-procurement system (e.g. European Commission, 2012; CSC 2010). However, such aggregation can also create a significant barrier to SME participation, since it merges potentially small contracts – suitable for SMEs – into larger contracts (see section 2.3 describing the barriers to SME participation). To alleviate such barriers, some e-procurement systems facilitate supply aggregation by enabling SMEs to submit joint bids (Smith 2001, Arozamena and Weinschelbaum 2010).

In geographically large countries or those with an unreliable postal system, an e-procurement system or, more simply, the acceptance of bids via e-email, can save costs for SMEs by eliminating the need to travel to the location where bids must be submitted.

3.4 LIMITING MARKET ENTRY FOR FOREIGN BIDDERS

3.4.1 Exclusion of foreign bidders

A straightforward method of ensuring that local IT firms bid for and win public sector tenders would be to exclude foreign firms from bidding.

The definition of “local firms” varies and may include firms that:

- Have a registered business entity in the country;
- Are registered in the country and have been operational for a specified number of years;
- Do a certain minimum percentage of value addition in the country for the project/service in question (i.e. a minimum specified percentage of local

material, labour and resources are sourced and consumed within the country); and/or

- Are majority-owned by nationals.

There are at least two potential barriers for the public sector to adopt policies limiting foreign competition when tendering for IT products and services. The first is linked to the World Trade Organization (WTO) Agreement on Government Procurement (GPA¹⁴) that countries voluntarily become a signatory to and adopt. Any GPA party offering products or services should be treated in a manner no less favourable than any other GPA party. This precludes the ability of a signatory country to grant domestic preference in public sector procurement over products, services and suppliers from other GPA parties.

As far as developing countries are concerned, the limitations imposed by the GPA to provide domestic preference are negligible. Most developing countries are not signatories to this agreement – of the 41 nations that are signatories to the GPA, the only developing and emerging economies are Armenia, China, Hong Kong SAR, and the Republic of Korea. Interestingly, several of these economies have well documented policies of government-led actions to promote their domestic high technology sectors (OECD, 2008; Singh, 2002). Moreover, not all government procurement is covered by GPA (only the procuring entities listed in the schedule and only procurements above specified amounts).

The second barrier with regard to limiting market entry for foreign bidders relates to restrictions imposed by donor agencies funding IT projects in developing countries. For example, it is common to specify that only projects below a certain value can qualify for purely domestic sourcing (where only domestic firms are invited or eligible to bid in the first place). Other projects must be open to internationally competitive bidding, although certain allowances can be made for domestic suppliers (e.g. allocation of preferential marks for local firms – see next section). Besides value limitations, donors sometimes restrict the exclusion of foreign bidders in other ways. For example, the World Bank rules for the procurement of consultancy services state that short-listing exclusively domestic consultants is only permitted when it can be demonstrated that a “sufficient number of qualified national firms are available” and the exclusion of foreign bidders is still “likely to result in proposals with competitive costs” (World Bank, 2010).

Even without formal barriers, mandating purely local participation should still be done with great care. In

countries where the local IT sector is under-developed, excluding international firms can result in a very small number of bids, potentially raising the price and reducing the scope for innovative solutions. In such a situation, the public sector is unlikely to obtain value for money. Excluding foreign bidders should therefore only be considered in a targeted and measured manner, which ensures that neither overall competition nor the value for money principle is jeopardized

3.4.2 Allocation of preferential marks for local experience, local language and local presence

A more practical measure to facilitate greater participation of local firms is to provide preferential treatment for local firms. For example, a certain percentage of marks can be allocated for local presence and experience, and local language capabilities. Bidders with a local business registration or local partners that add a certain percentage of value locally¹⁵ would receive such marks. The World Bank, for example, allows up to 7.5 per cent of total marks to be allocated for local suppliers or bids that have local partners (World Bank 2011). The most common form of domestic preference is to give local firms preference as long as the bid price is within a certain percentage range of the international firm's price (e.g. up to 15 per cent in the case of World Bank (2011) and the European Investment Bank (2011)).

Domestic preference within internationally competitive bidding can serve a very specific and positive role. When conducting IT tenders with some amount of local preference, international bidders must partner with domestic firms. International firms may merely seek a front partner to fulfil local presence requirements and execute the project by themselves. However, they may also seek partners that are actively involved and thus add value to the products and services in hand. As noted before in chapter 2, local firms may also benefit from knowledge transfer in such a scenario.

3.5 MITIGATING INFORMATION ASYMMETRIES

Chapter 2 discussed how certain procurement rules aimed at mitigating information asymmetries in procurement – such as requirements for performance guarantees or requirements for previous work of a similar type or size – disadvantage local SMEs. The public sector can execute several strategies to avoid such penalizations.

3.5.1 Concessions on bid and performance guarantee requirements

As mentioned in chapter 2, the inability to obtain performance guarantees required in public sector tenders is a known barrier for small firms to submit bids. One option is for the public sector and industry associations to create concessionary loan schemes or commercial insurance products that cover these risks, thereby helping local firms.

It may also be possible for the public sector to eliminate performance guarantee requirements for tenders of below a certain threshold value.

3.5.2 Accepting proof of quality other than previous work

Instead of relying on previous experience in supplying the public sector to ensure the quality of IT services being procured, public sector organizations can revert to other quality measures to assess the capability of bidders – particularly first time bidders – to deliver required services.

First, the public sector organization can allow the bidder to signal capability through the possession of third party certifications, which indicate the firm's capabilities to deliver products and services of stated quality. The pros and cons of such certification schemes are depicted in Table 5. In addition to organization-level certifications, individual certifications and qualifications of team members can also be specified in the tender. Examples of such certifications are PMP (Project Management Professional), Certified Software Test Professional, various vendor-specific certifications from CISCO, IBM, Linux vendors, Microsoft, and others.

Another approach to ensure quality is to contract independent quality assurance. This is useful when the public sector contractor does not have the necessary skills to define quality criteria in the tender documents, and to ensure that the deliverables meet these criteria.

3.6 SOFTWARE DESIGN THAT FACILITATES LOCAL FIRMS' PARTICIPATION

Apart from procurement-centric strategies, there are certain established technology practices that can facilitate local firm's participation in tenders.

Table 5. Pros and cons of selected schemes for quality assurance and certification

System	Pros	Cons
ISO standards (International Organization for Standardization)	<ul style="list-style-type: none"> • This family of standards is internationally well-known and addresses systemic management. • ISO 9001 is one of the most widely used quality standards • ISO 9001 certification often required in private and public procurement • Applicable to companies from different industries and regardless of their size • Additional IT-specific standards are available (e.g. ISO 15504, ISO 27000) 	<ul style="list-style-type: none"> • ISO 9001 standard is not software-specific • ISO certification involves substantial investments in terms of resources • Can create additional overhead and slow down processes
CMMI (Capability Maturity Model Integration)	<ul style="list-style-type: none"> • Probably the most renowned standard for the IT industry • Widely used by IT and software companies around the world • Designed specifically for the IT and software industry • Provides guidance for efficient improvement across multiple process disciplines in an organization. • Compatible with other methods such as ISO standards, ITIL and Agile • Continuous improvement of the CMMI model 	<ul style="list-style-type: none"> • Comparatively complex and demanding quality model which might overstretch the resources and capabilities of SMEs • Requires highly trained employees to manage the system • Implementation incurs substantial costs
ITMark (of the European Software Institute)	<ul style="list-style-type: none"> • Less complex than other standards and therefore easier to implement • Specifically designed for IT and software SMEs • Relatively cost-effective standard • Combination of CMMI, ISO 27000 and 10-squared method • Provides effective quality management coaching system for SMEs 	<ul style="list-style-type: none"> • Still relatively unknown at the international level • Lack of awareness and market penetration • Only a small number of companies certified • Benefits not sufficiently communicated within the IT industry
MPS.BR (Brazilian Software Process Improvement Programme)	<ul style="list-style-type: none"> • Specifically developed for IT SMEs in Brazil • Based on the standards ISO/EIC 12207, ISO/EIC15504 and CMMI • Continuous improvement of the standard • Allows for gradual implementation making it particularly suitable for SMEs • Provides cost-effective quality certification • Based on an integrated approach including marketing of the standard as well as special financial support schemes and training programs for SMEs 	<ul style="list-style-type: none"> • Currently confined to the Brazilian market • Lack of international awareness and reputation • Lack of market penetration
ITIL (IT Infrastructure Library)	<ul style="list-style-type: none"> • Well-established and internationally recognized standard for IT service management • Maps the entire IT service lifecycle, • Underpins the ISO/IEC 20000 standard 	<ul style="list-style-type: none"> • No organizational certification possible • Only focused on IT services

Source: UNCTAD (2012a).

3.6.1 Promoting interoperability and open standards

Interoperability refers to the property of diverse systems and organizations that enable them to work together (Cabinet Office, 2005). Interoperability among public sector organizations (Government-to-Government) and between public sector and business organizations (Government-to-Business) is critical to the success of e-government projects (Pardo and Tayi, 2007; Wang et al., 2007). Interoperability is a fundamental requirement to enable other desired features, such as modular design of IT systems (see section 3.6.2). Moreover, as discussed in section 2.3.2, the more open the standards used in public sector IT tenders, the more likely that local SMEs can participate in these tenders.

Interoperability in public sector IT systems requires common IT architectures and standards as well as

sustained support flanked by local capacity development in these areas. For example, a feasibility study on the promotion of interoperable IT systems in the public sector and the reinforcement of SMEs in Senegal concluded that the development of interoperability in the public sector could only realistically be recommended as a long-term approach (Brunsiek and Restel, 2011).

3.6.2 Modular design of IT systems in the public sector

Modularly designed software or systems have proven to have fewer errors, require less time for implementation and be less costly to maintain (Hass, undated; Sun Microsystems, 2007). Consequently, modularity has become the norm when designing software systems.

Systems that have been segregated into distinct modules can be tendered separately or in groups (as

opposed to the system as a whole). The separate tendering of modules provides additional opportunities for local IT services SMEs to win public contracts since these firms may have greater potential to fulfil the selection criteria given that: a) the range of expertise required will be limited to those needed for the specific module, and b) previous experience in projects of smaller size will be accepted and the required performance guarantees will be lower.

Modularity should not be limited to individual public sector projects. Ideally, the overall public sector information architecture should be modular, reusable and open (see Box 5). Such government-wide architecture would facilitate the participation of SMEs in two ways. First, it enables the modular design and tender of IT systems. Second, providing firms with opportunities to reuse existing elements (firms do not need to do everything from scratch) particularly benefits SMEs since they may have fewer resources/experience to design all the elements of a new system.

Apart from defining government-wide interoperability frameworks, governments should, for example, specify and mandate common security platforms, applications, databases, digital certification schemes,

enterprise information architecture frameworks, service management standards and project management methodologies. An example of a government-wide application would be a payment module, to be used in every application that includes payments to and from the government. Similarly, the archival system could be standardized and used by all public sector organizations.

The Republic of Korea has developed government-wide IT standards and has developed an open-source-based public sector information architecture called eGovFrame. This architecture was instrumental in stimulating local IT SME development, while at the same time improving the cost efficiency of IT investments and the quality of e-government services (see Box 6).

However, the economic and technical challenges for tendering the system in separate modules must also be considered. From a technical perspective, separate modules need to be smoothly integrated. This requires additional resources (e.g. to contract a third party to carry out the system integration) as well as the availability of interoperability standards. Apart from the complexity of publishing multiple tenders for modular-

Box 5. Benefits of having government-wide standards and architectures.

e-Government systems are generally open distributed systems, where information processing services are realized in an environment of heterogeneous IT resources and multiple organizational units, which are usually responsible for the specification and procurement of their IT systems.

Distributed systems rarely use technology from one single vendor, as a single vendor will be unable to provide a solution that will meet all requirements of and across multiple organizational units. It is therefore essential that the architecture, and any functions necessary to implement the architecture, is defined in a set of standards, so that multiple vendors can collaborate and their solutions can interoperate in the provision of distributed systems. Such standards will enable users to build systems that:

- Are open: providing both portability, i.e. the execution of components on different processing nodes without modification, and meaningful interactions between components.
- Are integrated: incorporating various systems and resources into a whole without costly ad-hoc developments.
- Are flexible: capable both of evolving and of accommodating the existence and continued operation of legacy systems.
- Are modular: allowing parts of a system to be autonomous, but interrelated.
- Can be federated: allowing a system to be combined with systems from different administrative or technical domains to achieve a single objective.
- Are manageable: allowing the resources of a system to be monitored, controlled and managed.
- Meet quality of service needs: covering the provision of timeliness, availability and reliability in the context of remote resources and interactions, together with provision of fault tolerance that allows the remainder of a distributed system to continue to operate in the event of failure of some part.
- Are secure: ensuring that system facilities and data are protected against unauthorized access.
- Offer transparency: masking from applications the details and the differences in aspects of distribution, such as heterogeneity of supporting software and hardware.

Source: Based on the Reference Model for Open Distributed Processing (ITU-T Rec. X.901 – X.904 or ISO/IEC 10746).

Box 6. Republic of Korea's eGovFrame: an e-government architecture that stimulates local IT development

In the Republic of Korea, a government-wide standard framework, eGovFrame, has stimulated the growth of local IT firms, including SMEs.

In 2007, the Ministry of Public Administration and Security of Korea decided to develop a standardized e-government framework to improve the quality of e-government services and the efficiency of IT investments by establishing a standardized open source software framework and promoting the reusability of components.

To design the eGovFrame, the environments and functionalities of the frameworks of five major IT companies were analyzed. As a result, four environments comprising 13 service layers and 54 service functionalities were identified. Moreover, to prevent repeated development of the same functions among different government systems, 67 e-government projects were reviewed and eventually 219 common components were defined.

Openness is a core element of the design of eGovFrame and follows four major approaches:

- Open sourcing: well-known and proven open source software was assessed and 40 kinds of software eventually selected for use in eGovFrame, which provides common modules and standard templates to developers and also serves as a platform for developing common functions.
- Open processes: the development process reflected inputs from over 500 stakeholders.
- Open outputs: the source code and other outputs are available online.
- Open ecosystem: a central, public-private cooperation centre has been established to support the initiative.

As a result of this strategy, the participation by SMEs in the public procurement of IT services has increased. Since its launch, SMEs have been awarded 64 per cent of all e-government projects applying the eGovFrame. The involvement of local SMEs has particularly been made possible by the decision to establish a standardized open source framework and by the provision of free training courses and certification to over 1,000 developers. Moreover, the participation of SMEs and large firms is widely promoted through the use of open processes and open communities equally including enterprises of all sizes.

The establishment of a standardized and interoperable framework and the reusability of components have led to significant cost savings. From 2009 to January 2012, the eGovFrame was used in over 152 e-government projects and, by the end of 2011, nearly \$ 60 million had been saved. In addition, Korea's exports of e-government solutions have widely benefited from Korea's experience and exceeded \$ 200 million in 2011.

Source: www.egovframe.go.kr, UNCTAD (2012a), Korea IT Times (2012).

ized systems, managing separate tenders instead of a single one also adds to the tendering costs. Awarding contracts to a single supplier may also reduce the overall contract cost when compared to multiple contracts with multiple suppliers. Similarly, standards such as the eGovFrame may not be fully replicable in many developing countries given, among others, the large upfront development costs involved. However, its philosophy and deployment approach – such as the use of existing open source solutions and the efforts made to develop the capacity of SMEs – can well be applied in developing countries.

3.6.3 Free and Open Source Software (FOSS)

Free and open source software (FOSS) is software for which the source code is freely available. Just like proprietary software, FOSS comes with user licenses and relies on IP regulation for protection and legal remedy. However, FOSS licenses specify certain freedoms to use,

copy, study, modify and redistribute the software.¹⁶ Such freedoms, for example to customize and use software without having to pay a licence fee, provide governments in developing countries with opportunities to:

- Reduce dependence on proprietary technologies and its vendors, e.g. with regard to future updates as well as to maintenance and adaptation of the software to local needs. Proprietary technologies may shield its vendors from competition. In contrast, reliance on FOSS enables more companies to supply products and related services.
- Lower costs and increase local value creation. In public sector organizations with a large number of users, the total cost of licenses for proprietary software can be considerable and, in a developing-country context, such license fees are often paid to foreign companies. FOSS is not free of cost – although it entails no licensing fees, services for the development, customization, installation, maintenance and support must still be procured.

However, such services can be sourced locally, if available.

- Develop their human capital since the collaborative production process of FOSS encourages local learning.
- Address concerns related to national security.

Thus, the adoption of FOSS by the public sector offers greater potential for local SMEs to participate in public procurement. Moreover, if governments design systems that are modular, it is more likely that FOSS applications are already available and ready for deployment, or that available applications can be customized with reasonable effort. This may give local firms a greater chance of competing with foreign suppliers.

Governments have followed different strategies regarding the use of FOSS (see UNCTAD 2004 and 2012a). Despite the benefits of FOSS, many public sector organizations in developing countries still rely on proprietary software. The main reasons for this are:

- Familiarity with proprietary software.
- Procuring entities in public sector organizations feel more comfortable opting for branded proprietary software produced by vendors that offer training, maintenance and support along with its software licenses.
- The transition to FOSS potentially incurs new costs in the short-term.
- There may also be concerns regarding the interoperability between FOSS and existing proprietary systems.
- Local capacity on FOSS may be limited, because IT-related capacity development – from basic computer literacy to higher education – has in the past mainly focused on proprietary technologies.

Taking all these arguments into account, the wider use of FOSS in the public sector needs to be accompanied by supporting measures, such as the development of relevant skills and capabilities in the IT sector (as was the case in the Republic of Korea). Such support measures, which go beyond the mission of public procurement offices, may require a concerted and coordinated effort by different public institutions (e.g. Ministry of Education or IT promotion agencies), universities and training institutions, and the local IT industry to provide and finance FOSS training.

During the past decade, both developed and developing countries have invested resources in defining and implementing an enabling environment for FOSS.

Efforts have been made towards leveling the playing field for FOSS by various governments. For example, Malaysia has adopted a comprehensive, long-term program for evolving a parallel open software ecosystem. This effort has helped the Government move significantly towards self-reliance. The approach to FOSS needs to be adapted on a case-by-case basis in accordance with the specific social, economic and political situation (UNCTAD 2012a).

3.7 AWARENESS RAISING AND CAPACITY DEVELOPMENT FOR LOCAL FIRMS AND PUBLIC SECTOR OFFICIALS

Increasing awareness among local SMEs about the opportunity that may exist in public procurement and fostering greater understanding among public officials about the potential of local firms is a basic step to promoting local IT sector development (see section 3.2.1). In addition, specific capacity development efforts addressed to local SMEs and public officials are also required.

A common barrier to potential SME bidders is the often burdensome procedures that have to be complied with when responding to public sector tenders (see section 2.3.3). Tender documents tend to be extensive and complex, and rules about tender submission are not always intuitive. Providing information – ideally in cooperation with IT-related associations – on how to navigate through the bidding process and how to complete the documentation could reduce bid rejection due to technicalities.

Equally important for developing local firm capacity is training public officers involved in procurement, so that their actions are not only aligned to local IT sector promotion strategies, but also to enable them to design and carry out tenders in ways that avoid erecting unnecessary barriers to local firm participation. Procurement managers often lack IT sector-related skills and thus cannot deal with the dynamic requirements of IT procurement. The balance between securing the best value for money (again, the core principle in public procurement) and designing procurement processes in such a way that local IT firms can participate often requires a unique approach to procurement.

Next, the seven sets of strategies described in this chapter are analysed in Chapter 4 with respect to their use in three countries: Kenya, Senegal and Sri Lanka.



4. COUNTRY EXPERIENCES: THREE CASE STUDIES

KEY MESSAGES

Kenya, Senegal and Sri Lanka have leveraged public procurement to varying degrees to promote local IT services firms.

In Sri Lanka, the ICT Agency (the agency responsible for large e-government programmes) has stimulated local IT SMEs development by establishing a framework of transparent and competitive tender procedures, and using a wide range of public procurement strategies and tools. For instance, by providing targeted preferential marks to local firms, it has encouraged joint ventures between local and international enterprises, and promoted technological capacity development among local firms.

In Senegal, the policy and legal environment to support local IT firms' participation in public procurement appears to be in place. However, practical results have so far been modest. There is scope for making procurement procedures more transparent (e.g. by improving the technical content of tender documents and by providing feedback on the tender process). Senegal has not yet adopted strategies to bridge information asymmetries, use best practice software design or provide training to local SMEs.

Kenya has seen limited progress in involving the local IT sector in public procurement. The existing policy framework is favourable to the promotion of SME participation but focuses in particular on supporting export-oriented IT-enabled services. Sound and transparent public procurement practices are only partially implemented. As in the case of Senegal, strategies to bridge information asymmetries or to use best practices in software design are not yet in place.

This chapter examines three countries that have made efforts to promote and develop their local ICT sector. In-depth case studies of Kenya, Senegal, and Sri Lanka are reviewed to identify ground-level realities, successes and failures of using procurement as a strategic tool in this context.

Kenya, Senegal and Sri Lanka were selected on the basis of their relatively developed local ICT sectors, geographic representation, and/or UNCTAD and GIZ existing experience in the countries. The case studies provided an opportunity to conduct a reality check from concrete experiences related to the use of public procurement as a tool to strengthen the ICT sector, but do not necessarily represent best practice.

In the cases of Kenya and Sri Lanka, in-depth qualitative interviews were held during field visits with key stakeholders. The Senegal case draws on recent work commissioned by GIZ on behalf of BMZ in the country (Brunsiak and Restel, 2011) and on an analysis of existing documents. Annex II lists the people interviewed for each case study.

Section 4.1 presents an overview of the socioeconomic context, the local ICT market and sector characteristics, and ICT use and procurement in the public sector in the three countries. Sections 4.2 to 4.4 present a brief analysis of the extent to which the seven broad strategies described in chapter 3 have been applied in each country. A more detailed examination of the national ICT market and sector characteristics and of how these strategies have been used in the three countries is provided in Annex I. The chapter concludes with a summary of the case studies.

4.1 OVERALL CONTEXT

Socioeconomic context

A country's social, economic and political situation provides the context in which the private sector operates, and has an impact on the successful ultimate ability of certain strategies to be successfully applied. Table 6 gives an overview of key socioeconomic indicators. Out of the three countries, Sri Lanka benefits from a more favourable socioeconomic context, with a higher GDP per capita, higher literacy rate and a somewhat lower perceived incidence of corruption. Kenya and Senegal are similar in terms of GDP per capita and both are significant players (in terms of economic activity) in their respective regions.

ICT market and sector characteristics

Market estimates suggest that ICT spending in the three countries is comparable in volume. Kenya and Sri Lanka spent approximately \$3.1 billion on ICT goods and services in 2011, and Senegal slightly less (\$2.6 billion) (Table 7). The bulk of this expenditure was for hardware and communications, whereas computer software and information services generally represented less than 10 per cent of total ICT spending, ranging from 9.3 per cent in Kenya to only 1.8 per cent in Sri Lanka.

There are limited official data on the size and composition of the ICT sector in the countries concerned. None of the countries has any significant production or exports of ICT goods. According to UNCTAD statistics,¹⁷ the export of ICT goods corresponded to about one per cent or less of total merchandise exports in

Table 6. Selected socio-economic indicators for Kenya, Senegal and Sri Lanka

Indicator	Kenya	Senegal	Sri Lanka
Population (2011)	40.5 million	12.4 million	20.7 million
GDP per capita (PPP, \$) (2011)	\$ 1'718	\$ 1'981	\$ 5'620
GDP per capita (current \$) (2011)	\$ 795	\$ 1'034	\$ 2'400
GDP growth 2005-2010, CAGR ²	4.6%	3.4 %	6.4%
Adult literacy rate (2011)	87%	50%	92%
Sectoral composition of the economy as % of GDP (2011)	55% services 25% agriculture 20% industry	60% services 17% agriculture 22% industry	58% services 13% agriculture 29% industry
Ranking in World Bank's 2012 <i>Doing Business</i> survey (out of 183 countries) ¹	109	154	89
Ranking in Transparency International 2011 <i>Corruption Perception Index</i> ¹ (out of 182 countries)	154	112	86

¹ Lower numbers indicate a better ranking.

² Compound Annual Growth Rate

Source: UNCTAD and BMZ based on World Bank, Unctadstat, Transparency International and individual country government publications.

Table 7. Spending and export orientation of computer software and services

	Total ICT spending \$ million, 2011 (includes communications, hardware, and computer software and services)	Computer software and services spending, \$ million, 2011		Computer software and information services exports, 2009, \$ million, 2011		
		Total	As % of total ICT spending	Total	Ratio to Computer software and services spending	As % of GDP
Kenya	3'178	295	9.3	0	0.00	<0.01
Senegal	2'570	78	3.7	6	0.08	<0.01
Sri Lanka	3'127	56	1.8	265	5.071	0.6

Source: UNCTAD and BMZ based on WITS/VIHS Global Insight, WTO.

Box 7. E-Government Development Index

The United Nations E-Government Survey 2012 assesses the state of e-government in 190 countries. Its E-Government Development Index (EGDI) measures the enthusiasm and capacity of national administrations to deliver electronic public services. It is based on a survey of the online presence of all 193 Member States, which assesses the technical features of national websites as well as e-government policies and strategies applied in general and in specific sectors for the delivery of services.

The EGDI is a composite index of the most important dimensions of e-government: scope and quality of online services, development status of telecommunication infrastructure, and inherent human capital. On the Online Service Index, which assesses the scope and quality of e-government services, Kenya ranks slightly better than Senegal and Sri Lanka.

According to the EGDI 2012 (see Box table 1), Kenya and Sri Lanka display similar levels of willingness and capacity to use ICT to deliver public services, while Senegal lags particularly due to weaknesses in human capital (lower literacy and educational enrolment ratios).

Box table 1. E-Government Development Index

	Kenya	Senegal	Sri Lanka
OVERALL RANKING (out of 190 countries)	119	163	115
Online Service Index – scope and quality of online services	0.431	0.346	0.379
<i>Stage I Emerging information services:</i> Information on public policy, regulations, documents and links to other departments is provided. Easy access to current and archived information.	100%	75%	92%
<i>Stage II Enhanced information services:</i> Enhanced one-way or simple two-way Government-to-citizen communication (e.g. downloadable forms). Audio/ video capabilities offered. Multilingual sites.	62%	31%	48%
<i>Stage III Transactional services:</i> Two-way communication with their citizens, incl. requesting/receiving inputs on public initiatives. Some e-authentication is required. Process non-financial transactions (e.g. e-voting, down/uploading forms, filing taxes or applying for certificates), as well as financial transactions	17%	12%	13%
<i>Stage IV Connected services:</i> Proactive request of information and opinions from citizens. E-services cut across the public institutions in a seamless manner. Integrated applications. Citizen-centric approach provides tailor-made services. Citizens empowered to have a voice in decision-making.	28%	36%	29%
Infrastructure Index – development status of telecommunication infrastructure	0.121	0.128	0.192
Human Capital Index – inherent human capital	0.711	0.327	0.736

Source: UNCTAD and BMZ based on United Nations (2012).

2010. Sri Lanka is the only country with sizeable exports of software and information services (Table 7). In 2009, Sri Lanka's ICT sector contributed 1.7 per cent to the GDP (Central Bank of Sri Lanka 2010).

ICT use and procurement in the public sector

Kenya, Senegal and Sri Lanka have all adopted national ICT strategies to increase the use of ICTs in the public sector. Moreover, they have implemented, to varying extents, a range of e-government programmes (see Box 7). These strategies and programmes have fostered increased demand for ICT goods and services by the public sector.

4.2 KENYA

In Kenya, public procurement is not part of ICT sector promotion strategies. While the promotion of a local ICT sector, in particular the export-oriented ITES, is a strategic national policy goal, the role of public procurement as a means to support this aim has not been explicitly considered.

The number of existing and planned e-government deployments suggests that there is a window of opportunity to leverage public sector procurement for the development of the local IT services industry. Donor countries can play a crucial role in this context given their participation in the financing of e-government initiatives.

Two key factors help explain why this has not happened yet. First, coordination across the public sector in issues regarding procurement is inadequate. The current legal framework establishes a fully decentralized procurement process and leaves public procurement to the discretion of various tender committees and procurement units. At the institutional level, there has been limited interaction between the key procurement entities like the Public Procurement Oversight Authority (PPOA) and relevant ICT bodies. Second, coordination with the IT services industry is non-existent. Mutual mistrust between public procuring entities and SMEs is widespread. Procurement entities have limited awareness of the current capabilities of the local IT services industry and SMEs perceive the public procurement market as difficult to penetrate due to corruption and red tape. No public agency spearheads public procurement for local IT sector development in Kenya.

Kenya has enacted legislation and regulations with the aim of establishing sound and efficient public procurement systems that ensure value for money, efficiency in service delivery and transparency, while at the same time promote the participation of lo-

cal SMEs. However, the positive impact of these regulations has so far been limited. The implementation of sound procurement systems has been inconsistent. For example, delays in procurement processes, including payment, are hampering SME participation. A number of actions have helped, or are planned to help, enhance the implementation of sound procurement systems (e.g. a manual on technical specifications and a template for ICT tenders have been prepared), but, without greater human resources capacities in procurement departments, these may not be sufficient to leverage public procurement for local IT firms development.

Kenya has no e-procurement system. A planned e-procurement module is yet to be implemented, as part of the new Integrated Financial Management Information System (IFMIS) currently being revised.

The provisions available under the Public Procurement and Disposal Act (PPDA) to provide preference to local SMEs are not being fully exploited, largely due to a lack of awareness among public procurement officials on these flexibilities. Guarantee requirements can be used at the discretion of the procuring entity but interviews suggested that concessions on guarantee requirements are not being made. Quality certifications are not used as proof of quality other than previous work. Given the insignificant uptake of formal quality certifications by IT services firms, their acceptance would have limited value.

Current public sector software design does not facilitate the participation of local IT services firms in public procurement. Moreover, the country does not have a comprehensive e-government interoperability framework. While the e-Government Directorate has taken some steps to adopt modular architecture for its shared services, there is no systematic approach to modular design in e-government. Kenya has not had an official policy supporting FOSS. Still, in September 2012 the e-Government Directorate indicated its intention to progressively migrate its IT operations to FOSS. Vendor lock-in, widespread presence of proprietary solutions, and lack of adequate human capacity currently limit the uptake of FOSS.

Capacity building is available for public procurement officials but is not sufficient. The Kenyan Institute of Supplies Management provides training and certification to public officials and it envisages providing training for SMEs and raising awareness on public procurement provisions. However, lack of funding and inadequate coordination have limited the reach of the capacity development activities.

4.3 SENEGAL

National policies in Senegal promote ICTs both as a key economic sector as well as a tool for improving the functioning of the public administration and for facilitating access to public services.

Senegal has a critical mass of IT-related public procurement. A number of e-government projects have been implemented and a significant number of these projects are financed by international donors. While local firms are encouraged to participate in national e-government projects, most donor-funded projects are awarded to international firms.

With the support of the Senegalese-German SME Competitiveness Programme, the public administration has conducted a mapping of the ICT sector in Senegal. Moreover, public officials participate in an on-going dialogue with IT companies in collaboration with the industry association, OPTIC. At the same time, there is limited coordination among public institutions involved in IT-related procurement as public entities are independent in the way they acquire related goods and services and the ICT policy and public procurement policy are not linked.

No agency is at present spearheading public procurement for local IT sector development. While the State Agency for Informatics (ADIE) is responsible for the national e-government strategy, the automation of public sector institutions and the development of an e-government architecture and interoperability framework, it does not coordinate public IT procurement. There is only limited coordination between the Central Department for Public Procurement (DCMP) and ADIE.

Senegal has established sound policy, institutional and legislative frameworks for public procurement that include various provisions for promoting the participation of local SMEs. These provisions include measures to break down large tenders, the allocation of preferential marks for local presence, foregoing guarantee requirements for tenders under \$100,000 or for intellectual services tenders, and a requirement to publish tenders online and to inform rejected candidates.

Notwithstanding these provisions, the participation of local SMEs in the public procurement system has so far been limited. Main barriers include:

- Complex legislation, where procedures and provisions are distributed over different laws and regulations.
- Prerequisites for bidding, such as evidence of at least three years' experience, tender guarantees in

the case of tenders for ICT goods, or the need to purchase tender documents.

- Unclear technical specifications that prevent the submission of a competitive bid.
- Partial online publication of public tenders.
- Limited feedback on tender evaluation outcomes.

Current software design practices do not facilitate the participation of local firms. The lack of coherent and consistent guidelines for e-government-related projects on the part of the Government as well as the lack of coordination among donor organizations has resulted in the purchase of heterogeneous IT systems with limited interoperability. While the Government has taken a series of actions to promote an interoperability and standards framework, the lack of financial resources and technical capabilities limits its actual deployment. The use of modular design of IT systems in the public sector, while encouraged by the Government, is not well documented.

There is a lack of adoption of FOSS by public institutions and an absence of a critical mass of FOSS developers in the public sector, even if ADIE has set an example by using FOSS for its operations, and universities encourage the use of FOSS.

The Government has an annual training plan for capacity building in public procurement. However, interviews with stakeholders indicate capacity weaknesses among stakeholders in regard to public procurement of IT services. In cooperation with Germany (and possibly other donors), a training course for government officials involved in public procurement is being planned to improve the technical specifications of IT tenders.

4.4 SRI LANKA

The Government of Sri Lanka considers public procurement as part of IT sector promotion strategies, particularly in the context of the e-Sri Lanka Initiative, a large ICT-enabled development program started in 2003. The public procurement linked to this initiative has enabled significant participation of local IT firms. The e-Sri Lanka Initiative also includes a Private Sector Development Program, although it mainly focuses on promoting export-oriented software firms.

Sri Lanka has a critical mass of IT-related procurement. As part of the e-Sri Lanka Initiative, over \$32 million have been disbursed since 2003 in the e-Government

Program implemented by the ICT Agency (ICTA). The program includes a number of projects for automating public sector processes, for creating large data repositories (e.g. ePopulation Register, Land Registry), as well as a broadband network that connects public sector organizations. International donors, in particular the World Bank, have played a key role in financing this and other public programs. While ICTA may be the single largest buyer of ICT goods and services, it is not the only one. Sri Lanka's public administration also procures related goods and services outside the e-Sri Lanka Initiative.

The public administration in Sri Lanka has made concrete efforts to understand the current state of the local IT services industry and coordinate with the IT sector. Surveys and publications on the sector and its workforce are available and the public sector has formal and informal interactions with multiple industry associations.

ICTA has spearheaded public procurement for local IT sector development. As a single agency handling a large volume of e-Government projects and endowed with an overarching mandate, ICTA has been able to take a visible and leading role in promoting the development and internationalization of local IT services firms.

On the other hand, coordination across different parts of the public sector takes place only to a limited extent. Although the 2011 budget specified that all ICT procurements should go through ICTA, in reality this does not always happen.

Good procurement practices have been promoted by ICTA. ICTA tenders are based on World Bank procurement processes and, while burdensome, are considered to be relatively transparent and open. However, other public tenders where ICTA is not involved are perceived to be less transparent. Sri Lanka has not used e-procurement tools for its public procurement processes.

Sri Lanka has successfully deployed a range of strategies to increase the participation of local firms in public IT-related tenders, including the allocation of preferential marks, the use of measures to mitigate information asymmetries, and the use of a software design that facilitates local firm participation. As a result, of a sample of 13 key e-services procured by ICTA, all but one included a local firm in the winning bid.

ICTA has used the opportunities available to provide domestic preference within internationally competitive bidding. In tender evaluations, ICTA has regularly al-

located marks (up to 15 per cent of the total marks, as allowed by World Bank rules) to domestic firms. This practice has promoted joint ventures between international and local firms which, over time, have encouraged knowledge transfer and technological learning by local firms. An official directive requesting a minimum of 50 per cent local value addition if the software is bought from a foreign supplier has not proved to be effective, however.

Concessions on bid and performance guarantee requirements are not made in public sector tenders. Potential bidders do not necessarily consider such guarantee requirements as a barrier to entry. On the other hand, in addition to previous work experience, quality certifications, which are increasingly common among firms in Sri Lanka, have been accepted as proof of quality.

Technology-related strategies adopted by ICTA have also contributed to the participation of local SMEs in public sector tenders. ICTA, which has a reasonable amount of authority to set policy on technical matters, has established clear interoperability standards and has implemented a modular e-government architecture. The small size of each module has resulted in tenders that are more attractive to SMEs and local firms with specific expertise. However, no official policy supporting FOSS use in the public administration exists. ICTA has also employed alternative public procurement processes and hired individual local consultants to serve a specific demand for IT services where agile software development (a non-traditional approach to software development) was used.

Awareness-raising and capacity development activities have helped promote local firms' participation in public tenders. ICTA has conducted training workshops for local bidders along World Bank tender guidelines to address the fact that many non-compliant bids (often due to small technicalities) were being submitted. As a result, ICTA has experienced a reduction in non-compliant bids.

4.5 SUMMARY OF CASE STUDIES

This chapter has presented the actions taken in three developing countries to encourage and promote the development of local IT services firms by leveraging public procurement. The methods used and the achievements reached differ among the three countries, reflecting to some extent their varying levels of development (Table 8).

Table 8. Overview of the procurement strategies that have been adopted in Kenya, Senegal and Sri Lanka.

	Kenya	Senegal	Sri Lanka
1. Establishing the basics			
Public procurement as part of IT sector promotion strategies	No	Yes	Yes
Critical mass of IT-related procurement	Yes	Yes	Yes
Understanding the current state of the local IT services industry	No	Moderately	Yes
2. Strengthening the institutional framework			
Coordination across the public sector and the industry	Moderately	Moderately	Moderately
Agency/department spearheads public procurement for local IT sector development	No	No	Yes
3. Promoting good procurement practices			
Implementing transparent and open tender procedures	Moderately	Limited	Moderately
Deploying e-procurement systems	No	Limited	No
4. Limiting market entry for foreign bidders			
Exclusion of foreign bidders	No	No	Limited
Allocation of preferential marks for local experience, local language and local presence	No	Yes	Yes
5. Mitigating the effects of information asymmetries in procurement			
Concessions on bid and performance guarantee requirements	No	No	No
Accepting proof of quality other than previous work	No	No	Yes
6. Software design that facilitates local firms' participation			
Promoting interoperability and open standards	Limited	Limited	Yes
Modular design of IT systems in the public sector	Limited	No	Yes
Promoting FOSS	No	Limited	No
7. Awareness raising and capacity development for local firms and public sector officials			
Awareness raising and capacity development for local firms and public sector officials	Moderately	Limited	Moderately

Note: Limited: refers to the implementation of one or two actions relevant for the strategy. Moderately: refers to the implementation of several actions relevant for the strategy.

Source: UNCTAD and BMZ.

Among the three countries reviewed, Sri Lanka appears to have had the most success in terms of engaging local IT services firms in public tenders. In particular, ICTA, the principal agency responsible for the implementation of large e-government programmes, has expanded the potential opportunities available to local SMEs by establishing a framework of transparent and competitive tender procedures. Several factors have enabled ICTA to assume an effective role as a lead agency. First, ICTA has been given a reasonable amount of authority to design policy on technical matters (such as setting interoperability standards). Second, Sri Lanka has a more developed local IT services sector than Kenya and Senegal, with several local exporters. This allows for the use of a wider range of public procurement strategies and tools. Finally, ICTA employs a team of skilled technical staff and now enjoys several years of experience, which has enabled it to earn trust and recognition.

In Senegal, the policy and legal environment for helping local IT firms participate in public procurement appears to be in place. However, practical results have been modest so far. Several basic conditions still need to be acquired to address this situation. First, there is scope for making procurement procedures more transparent. For instance, the technical content of tender documents is often inadequate for SMEs to be able to submit offers and there is limited feedback on the tender process. Second, coordination among public agencies could be enhanced. Third, implementing existing policies (such as the provision for preferential marks to qualified local SMEs) and disseminating knowledge about the nature and capabilities of the local ICT sector among relevant public authorities would be very valuable. Senegal has not embraced measures to bridge information asymmetries, use best practice software design, or provide training to local SMEs.

While having the highest spending on ICT goods and services among the three countries, Kenya has so far seen limited progress in involving the local IT sector in public procurement. The existing policy framework is in many regards favourable to SME participation. However, the main policy focus has been on supporting export-oriented ITES. Despite some public-private dialogue, the development of a clear strategy to improve the understanding about and to strengthen the capabilities of local IT SMEs could go a long way towards enabling them to participate more effectively in public procurement

projects. Sound and transparent public procurement practices are currently only partially implemented. As in the case of Senegal, strategies to bridge information asymmetries or to use best practices in software design to facilitate local firm participation have not been adopted.

In the three country studies, most actions have been taken at the macro level (for example, with the establishment of enabling legislations). Interventions at the meso and micro level to strengthen the contribution of national IT associations and develop the capabilities of local IT SMEs have been limited.



5. CONCLUSIONS AND RECOMMENDATIONS

KEY MESSAGES

Governments wishing to leverage public procurement for promoting local IT sector development are recommended to:

- Ensure that key conditions for success are in place: a shared IT and public procurement policy, a critical mass of public ICT projects and a good understanding of the capabilities of the local IT services sector.
- Strengthen the institutional framework, promoting public and private sector coordination and designating an agency to spearhead public procurement for local IT sector development.
- Establish good practices along the entire procurement process.
- Provide targeted preferential treatment of local suppliers without jeopardizing the quality of the goods or services procured.
- Increase the options for SMEs to present bids.
- Adopt best practice software design to facilitate local firm participation.
- Promote awareness and capacity development, both among IT firms and in relevant public authorities.

The promotion of the domestic ICT sector is a priority for many developing and emerging economies. It is not only a productive and dynamic sector in itself; it also plays a crucial role in ensuring that ICTs can be used throughout the economy and society. The performance of the local ICT sector is therefore a key determinant of the ability of countries to transition to an inclusive Information Society.

Within the ICT sector, this report gives particular attention to IT services since this industry provides the largest opportunities for market entry and for returns on investment in developing and emerging economies.

Leveraging public procurement is one of several ways in which governments can support the IT services sector. In low-income economies, where IT use in the domestic private sector is relatively poorly developed, the public sector often represents the most important market for IT services. In general, opportunities in the public sector are expanding as governments are increasingly deploying systems to provide e-services to citizens and businesses.

The primary aim of public procurement is to obtain the best value for money. The promotion of the local IT services industry, however, does not need to be inconsistent with this objective. On the contrary, the strengthening of the local IT industry increases the number of potential suppliers that can bid for public tenders in the future, thus increasing competition. When domestic capabilities are underdeveloped, on the other hand, the public sector is forced to procure imported solutions, which may be more expensive.

Some countries have already taken wide ranging actions in using public procurement to promote the local IT industry with positive results. As outlined in the case study, Sri Lanka has implemented practical measures through which e-government projects were able to generate opportunities for local firms.

Leveraging public procurement for IT sector development nonetheless remains a relatively new policy area in most developing and emerging economies. It is a complex policy instrument and its successful application requires a certain level of capabilities (in both the public and the private sector) as well as open and transparent procurement processes.

For those Governments that decide to leverage public procurement for the development of local IT services, the following seven strategic recommendations are made.

1. Ensure that key conditions for success are in place: a shared IT and public procurement policy, a critical mass of public ICT projects and a good understanding of the capabilities of the local IT services sector.

Before taking concrete steps to link the two policy objectives of promoting the local IT sector while at the same time procuring value for money, governments should ensure that a number of key conditions are in place. First, it is essential to secure the commitment from key authorities. The fact that in most cases several different ministries and agencies are involved makes it particularly important to achieve a common vision and objective towards which the relevant parties can work. This requires that public procurement policies are effectively integrated in broader ICT policies.

Second, the promotion of domestic demand for IT services should be recognized as a complement to efforts aimed at supporting export-led growth of the sector. The public sector can stimulate domestic suppliers to upgrade and innovate, and to develop capabilities that can subsequently be applied in the export market as well.

Third, before launching a major initiative to leverage public procurement, governments should explore their current and future needs for e-government and other IT systems. It may only make sense to dedicate significant resources to adjust public procurement if there is, or will be, a critical mass of procurement projects.

Finally, at an early stage, governments should develop an understanding of the capabilities of the local IT services sector so that a realistic assessment of the kind of projects that could be undertaken by domestic suppliers in the short and medium term becomes possible.

2. Strengthen the institutional framework, promoting public-private sector coordination and designating an agency to spearhead public procurement for local IT sector development.

The competitiveness of local IT industries are most effectively improved if all relevant stakeholders cooperate in strategy formulation and implementation. Effective private-public dialogue is important to identify barriers to local IT sector participation in public procurement and the need for capacity development among local SMEs. Close coordination among public

sector organisations is required to set IT and interoperability standards, pool tenders and adopt good procurement practices.

The successful implementation of public procurement strategies that also promote local IT firm participation may require improvements in the institutional set-up. The approach chosen will need to be tailored to the particular circumstances of each country. Countries may consider promoting an agency or a department to spearhead public procurement for local IT sector development. Such sponsoring should be accompanied by the sufficient financial, technical and human resources. In Sri Lanka, the ICT Agency was able to fulfil this role after it was endowed with adequate human and financial resources and given the necessary authority to set technical standards. Such an agency/department may also take an active role in coordinating policy across different government institutions, and in consulting with the private sector.

However, sponsoring an agency to take this role will only produce results if coordination processes are well-governed and transparent. Otherwise, the attempt to coordinate activities among public sector organizations may rather lead to unnecessary bureaucracy and wasteful use of limited resources.

3. Establish good practices along the entire procurement process.

Establishing clear, transparent and open tender procedures is essential to ensure successful outcomes of any public procurement processes. When these are absent, there is a greater risk that tenders are awarded to those suppliers that are the best connected rather than to those that can offer the best value for money. Interviews with local IT firms in the countries studied in this report indicated that the lack of transparent and open procurement procedures was a major barrier to their participation. The main barriers cited by IT SMEs (although these are not exclusive to IT public procurement) were the lack of easy access to tender documents and other key procurement information, inadequate quality of tendering documents, lack of feedback on unsuccessful bids and frequent payment delays. Implementing clear, open and transparent tender procedures remains an essential step in order for a procurement-based sector promotion instrument to be effectively applied.

E-procurement can help make public procurement processes more open and transparent. The three

countries studied utilized e-procurement in a rather limited manner, which indicates that there may be various obstacles hindering the digitization of public procurement processes. Governments could start by putting in place some of the easier to execute applications of an e-procurement system, such as the online publication of tenders and procurement notices.

4. Provide targeted preferential treatment of local suppliers without jeopardizing the quality of the services procured.

Governments may consider different options to give local IT services suppliers a certain advantage when bidding for public tenders. In this context, an outright ban on foreign bidders is not advisable. Indeed, none of the countries studied have followed such an approach. However, the lawful use of preferential marks for local experience, local language, and local presence within open and competitive public procurement processes can be effective means to encourage the participation of local firms. Such preferential marks can also be used as an incentive for the formation of joint ventures between local and foreign firms, which can allow local and less experienced firms to become more accustomed to the public procurement process. In Sri Lanka, this kind of collaboration helped to build relevant skills and represented a stepping stone for local firms. To maintain a competitive environment, preferential marks should be strategically targeted only to those areas where the local industry has the capabilities needed to produce bids of sufficiently high quality. This further underscores the importance of public authorities having a good understanding of the strengths and weaknesses of the local IT sector.

5. Increase the options for SMEs to present bids.

In order to reduce the threshold for local SMEs to participate in the bidding process, governments may consider adjusting various criteria against which bids are assessed. First, it may be appropriate to provide concessions on bid and performance guarantee requirements. While the case studies included in this report did not feature such concessions, several SMEs interviewed remarked that limitations imposed by guarantee requirements represented a significant barrier. The introduction of concessions could also be used strategically in such projects that are particularly

suited for local SMEs with appropriate capabilities and experience.

Another way to increase the options to present bids for SMEs that have limited experience in public procurement is to use quality control criteria other than a previous track record specifically linked to public procurement. Alternative quality signals may include firm, product or expert certification. The acceptance of such signals is recommended especially where a large number of enterprises have obtained a certain level of recognized quality certification.

6. Adopt best practice software design to facilitate local firm participation.

The way in which a public IT project is designed can have a major impact on the ability of local firms to participate in the procurement process. Governments may consider relevant steps to make IT projects more conducive to the participation of smaller bidders. These may include the use of modular design of systems and architecture to allow for tendering of smaller projects. However, the successful use of this approach requires a certain degree of authority to establish technical standards and advanced technical software development skills within the relevant authorities. It also necessitates clear assignment of who will be responsible for systems integration and careful attention to IT and interoperability standards. The establishment of interoperability and standard frameworks, and the promotion of open standards, can help to increase the potential number of bidders and fosters the participation of IT SMEs. The establishment of quality assurance panels of senior experts may be helpful to support the use of a modular e-government architecture.

Governments should also consider the use of FOSS where feasible. FOSS has not been adopted formally nor is it widely encouraged by the governments in the three countries studied. In other countries, however, the promotion of FOSS use has had positive results in the form of reduced costs, greater possibilities for local suppliers to provide solutions tailored to the specific needs of the users, and reduction of errors. Meanwhile, barriers to FOSS adoption may include a lack of a critical mass of skilled FOSS developers and lobbying against the use of FOSS by proprietary software firms.

Flexibilities should be provided to ensure that traditional procurement methods do not prevent the adoption of agile software development methodologies that have the potential to deliver appropriate solutions in shorter periods of time and at a lower cost.

7. Promote awareness and capacity development, both among IT firms and in relevant public authorities.

A common obstacle to greater involvement of local IT services firms is a lack of awareness of available opportunities. This applies to both firms in the IT sector and to public authorities responsible for the procurement process. Measures to raise the level of mutual awareness are therefore recommended as a mechanism to promote greater participation of local firms.

Beyond awareness-raising, governments – ideally in cooperation with IT-related associations – should also consider the organization of training sessions for SMEs on how to submit tenders. Such training does not appear to be widespread yet but it has had positive results when applied. In Sri Lanka, for example, it helped to lower the incidence of non-compliant bids on the basis of mere technicalities.

There may also be a case for sponsoring programmes to enhance the capabilities of SMEs to work with relevant FOSS that is likely to be applied in the development of new e-government applications. By boosting the expertise among local IT services firms in relevant areas, the chances increase that domestic suppliers possess the required expertise to submit a winning bid. It may be appropriate to establish a programme in collaboration with the public agencies responsible for SME development, as well as with national IT/software association, to organize such training activities, as well as to encourage the certification of SMEs and professionals.

Adequate attention should be paid to raising the awareness and knowledge among public authorities responsible for IT procurement with regard to best practices in IT public procurement and in technical areas (e.g. FOSS, interoperability standards, etc.). This is essential to ensure that procurement strategies are designed in such a way that local firms are given a fair chance to compete.

Overview of strategies

The mix of strategies chosen will have to be adapted to the specific circumstances in each country. Table 9 provides an overview of the different strategies available, distinguishing between those that can be regarded as “essential” and should be considered as a priority, and “advanced” strategies that are more resource-intensive and that require a high level of commitment and stronger capabilities in the private and public sectors.

Table 9. Strategies to promote local IT sector development through public procurement

	Essential	Advanced
1. Establishing the basics		
Public procurement as part of IT sector promotion strategies	X	
Critical mass of IT-related procurement	X	
Understanding the current state of the local IT services industry	X	
2. Strengthening the institutional framework		
Coordination across the public sector and the industry	X	
Agency/department spearheads public procurement for local IT sector development	X	
3. Promoting good procurement practices		
Implementing transparent and open tender procedures	X	
Deploying e-procurement systems		X
4. Limiting market entry for foreign bidders		
Exclusion of foreign bidders	Not recommended	Not recommended
Allocation of preferential marks for local experience, local language and local presence	X	
5. Mitigating the effects of information asymmetries in procurement		
Concessions on bid and performance guarantee requirements	X	
Accepting proof of quality other than previous work		X
6. Software design that facilitates local firms' participation		
Promoting interoperability and open standards ¹	X	X
Modular design of IT systems in the public sector ¹	X	X
Promoting FOSS	X	
7. Awareness raising and capacity development for local firms and public sector officials		
Awareness raising and capacity development for local firms and public sector officials	X	

Notes:

¹ While interoperability, open standards and modular design can be easily mandated or used in individual systems, the use of modular, reusable and open approaches at a government-wide level may require more resources and a higher level of commitment.

Source: UNCTAD and BMZ.

Governments of countries with a nascent IT services sector should at least consider implementing the essential strategies mentioned above (for instance, developing the capacities of local firms to participate in public procurement processes or providing targeted preferential treatment for local suppliers without jeopardizing the quality of the goods or services procured).

Implementing one or two carefully designed e-government projects with the involvement of domestic SMEs can help to showcase their potential and change perceptions across the public and private sectors. In many developing and emerging economies, a sense of mistrust remains between the public and private sector that hampers effective public-private dialogue in the area of public procurement.

In countries with more mature capacities in the local IT sector and with robust public procurement systems in place, more sophisticated strategies may generate positive impact. For instance, they might promote a

national e-government architecture that is modular, open and reusable. E-procurement represents another option to make bidding processes more open and transparent. This has already been tried and tested with positive outcomes in countries such as Chile and Canada.

The practical implementation of various strategies may require interventions not only at the macro level but also at meso and micro levels. Involving the local IT industry association in the mapping of the local sector or in public-private dialogue are examples of significant meso level interventions. Micro level interventions, such as training of enterprises in the areas of FOSS, procurement procedures, quality standards, and certification methods are critical in order to expand the base of IT firms that are equipped to participate in public procurement. This should be a key objective for the government, with a view to securing more competition among potential suppliers when future

procurement projects are announced. The responsibility for encouraging and developing such capabilities should not rest exclusively with national ICT agencies or procurement offices. National IT/software associations can also be invited and encouraged to play an active role.

Donor governments and international financial institutions should take the wider impact of IT programmes and e-government projects on local IT sector growth and competitiveness into account when financing projects in developing and emerging economies. The study has shown that the promotion of local IT sector development through public procurement can take place without jeopardizing procurement integrity. When financing e-government programmes, donor agencies should therefore consider different ways of strengthening the interface between public procurement and local IT sector development and ensure that local SMEs have a fair chance to compete. This may

require greater flexibility in procurement processes and the allocation of sufficient resources to the provision of training of local suppliers. In addition, donors may support the strengthening of local institutions – e.g. national industry associations – that provide training and other services to local IT SMEs. They may also commission further research in this area to assess the impact of different policies and strategies.

There is considerable scope for enhancing the participation of local IT firms in public procurement. When successfully implemented, this can help develop the necessary critical mass of local demand to make a local IT sector more competitive, while at the same time expand the supplier base on which future public procurement projects can draw. Governments should seize this opportunity to speed up the transition towards a more inclusive Information Society, generate high value added jobs, spur local innovation and learning, and reduce the cost of procurement.



ANNEX 1. CASE STUDIES

1.1 KENYA

1.1.1 ICT market and sector characteristics

Of the three countries, Kenya spends the most on ICT. Most of its ICT expenditures are on telecommunications, while 9 per cent is dedicated to computer software and services (Table 7). While the combined employment in the ICT and ITES sector is over 100,000 (which amounts to 0.7 per cent of the total labour force), the non-telecom formal employment (that is, in computer software, computer services, and as well as ITES) was only 10,000.¹⁸ As a large share of these 10,000 was involved in ITES; IT services at the moment employ a very small workforce.

The Government has focused its ICT sector development strategy on developing the export sector, and has concentrated its attention particularly on the development of ITES. The Kenya ICT Board promotes the growth of technology companies that serve international customers. The Government has set up tax-free zones and funded various projects to promote exports. Kenya now hosts several world-class business process outsourcing (BPO) operations, including call centres, enabled by improved international broadband connectivity in recent years. In contrast, the development of the local IT services market has hitherto attracted only limited attention. Yet, some local firms – such as Ushahidi¹⁹ and Pamoja²⁰ – have succeeded in developing web-based niche solutions targeted towards users in Kenya and worldwide. The rapid expansion of mobile phone use is creating growing demand for mobile applications. In 2011, there were over 24 million mobile subscriptions and 17 million mobile money subscriptions for a population of about 40 million people (UNCTAD 2012b).

Kenya has several industry associations in the ICT and ITES sectors, which have played a significant role in national ICT policy development (Waema et al. 2010). TESPOK (Telecommunication Service Providers of Kenya) is the umbrella organisation for Internet Services Providers. KITOS (Kenya Information Technology and Outsourcing Society) is the ITES and BPO industry association. A civil society organization, KICTANET, comprises a loose network of donors and NGOs and takes an active part in Internet governance.

1.1.2 Public procurement strategies

Establishing the basics

Kenya's National ICT Policy (MIC 2006), and likely its revised 2012 version, focuses its ICT sector development strategy on developing the export sector, particularly the ITES sector. The Kenya ICT Board was established in 2007 to advise the government on the development and promotion of ICT industries and to promote Kenya as an ICT destination, especially promoting BPO and offshoring. National policy has not considered the role of public procurement in the development of the national ICT sector.

In 2004, the e-Government Directorate was established to coordinate e-government services across ministries and to develop a national e-government strategy. The Directorate is, inter alia, responsible for developing and enforcing standards to promote interoperability of systems and data. The Kenya ICT Board has also played a substantial role in the execution of e-government programmes²¹ and in supporting wider ICT use in the public sector.

Several projects were launched as part of the 2004-2009 e-government strategy, including the Government Exchange (a virtual private network for the government), a call centre, an enterprise messaging and collaboration system, a national portal, a national data centre and a series of citizen-centric applications that are available directly through the e-government portal. Some of these applications include PIN and VAT certificate applications, online tax return filing, and the customs clearance system (Simba System). Other online services include driving licences, company registration, the land title registration systems and the recent open government data portal.²² Additional e-government services are also provided in several other areas such as health and education. The Integrated Financial Management Information System (IFMIS), an Oracle-based enterprise resource planning system, is the largest e-government project. Despite the number of services being provided online, the availability of e-government services is not yet widespread.²³ The draft Connected Kenya ICT Master Plan 2012-2017 includes e-government as one of the three strategic pillars of the national ICT strategy.²⁴

Hardware and proprietary software represent the main IT-related procurement expenses. Large contracts are typically awarded to a limited number of suppliers.²⁵

Donor financing, especially from the World Bank, has been important for the expansion of e-government

applications in Kenya. Since 2007, the World Bank has allocated a total of \$169 million in credit for a multi-year Kenya Transparency and Communications Infrastructure Project (KTCIP), which aims at improving connectivity and supporting e-government and e-procurement applications.²⁶

Comprehensive data on the IT services sector are not available. The new Small and Micro Enterprises Bill is expected to provide the legal framework for (and encourage) the registration of SMEs. This may help develop a registry of local IT firms.

Strengthening the institutional framework

Coordination on public procurement matters across the public sector is only partial. The current legal framework establishes a fully decentralized process and leaves public procurement to the discretion of various tender committees and procurement units. There is limited interaction between the key procurement entities like the Public Procurement Oversight Authority (PPOA) and the relevant ICT bodies (the Ministry of Information and Communication, the Directorate of e-Government and the Kenya ICT Board), each with their own respective policy goals. However, there is a certain level of coordination between the PPOA and the Kenyan Institute of Supplies Management, which supports capacity building of public procurement officials.

Coordination with the IT services industry has been limited. The fragmentation of the industry associations and their focus on telecommunications and export-oriented activities can be regarded as a weakness with regard to raising awareness of the potential contributions by the local IT services sector to the public procurement market. It has not been a priority for any association to direct the government's attention to leveraging public procurement for the growth of the IT services sector.

Mutual mistrust between public procuring entities and SMEs is a major stumbling block. Procurement entities perceive local IT SMEs as being under-resourced, providing low quality products, and unable to deliver on time. At the same time, the SMEs' overall perception is that it is difficult to penetrate the public procurement market due to corruption and red tape. Despite efforts to reduce corruption in public procurement, it remains a major issue.²⁷ Several enterprises interviewed preferred to sell their products and services to the private sector rather than to the public sector. Some had altogether given up considering the public sector as a possible market for their businesses.

Kenya does not have a public agency that spearheads public procurement for local IT sector development. The Directorate of e-Government and different authorities procure ICT goods and services internally without coordination at the national level.

Promoting good procurement practices

Kenya has enacted legislation and regulations with the aim to establish sound and efficient public procurement systems that ensure value for money, efficiency in service delivery and transparency, while at the same time promoting the participation of local SMEs. However, the implementation of sound procurement systems has been inconsistent. SMEs often do not get access to key procurement information (including procurement plans, tender notices, contract awards, procurement statistics, legal and policy documents, and studies) as these are not available online. Long delays at each stage of the procurement process also make it difficult for SMEs to participate in public procurement. The delay of payments has been singled out as the most serious problem in the procurement process. Legislation states that payments should be made within 30 days. In reality, however, payments may take as long as 180 days to be released. Failure to adhere to legislated accounting stipulations, excessive bureaucracy, insufficient funds, corruption, staff absences, and poor work ethics all contribute to such payment delays.²⁸

These challenges are not exclusive to IT public procurement and a number of actions have helped, or are planned to help, enhance the implementation of sound procurement systems. For instance, PPOA has produced a manual on technical specifications, and the E-government Directorate plans to develop templates for ICT technical specifications. However, the PPOA manual is not widely used by SMEs in the preparation of tender documents and adequate human resources have not been allocated to develop templates of ICT tenders. There are also plans to develop e-procurement as a module of IFMIS, but there have been delays in launching this system.

Promoting local SME participation in public procurement

The new Constitution of Kenya (2010), the Public Procurement and Disposal Act (PPDA) of 2005,²⁹ the Public Procurement and Disposal Regulations of 2006 and the Supplies Practitioners Management Act of 2007³⁰ provide the legal and policy framework for SME participation in public procurement. Together,

they give explicit preference to the participation of local firms, with a view to improving local economic growth. Article 227 of the Constitution of Kenya and Section 39 of the PPDA provide special preferences for the participation of SMEs in public procurement. These include the exclusion of foreign bidders under certain circumstances (i.e. *“where the funding is 100% from the Government of Kenya or a Kenyan body; and the amounts are below the prescribed threshold”* (Art. 39.8 PPDA)).

However, according to the interviews held with several stakeholders, there is inconsistent implementation of these provisions. Public agencies, both the ICT departments and the procurement divisions, are often not aware of the PPDA's provisions for local SME involvement.

The proposed and pending Small and Micro Enterprises Bill, once enacted by parliament, is expected to give legislative recognition for local firms. The legislation proposes to allocate 25 per cent of the value of public procurement to local SMEs. In procurement terms this would amount to 1.5-2.5 per cent of GDP, a substantial sum that should boost the growth of local firms, including in the IT sector.

Mitigating information asymmetries

Guarantee requirements can be used at the discretion of the procuring entity (art. 57 PPDA) and interviews suggested that concessions on guarantee requirements are not being made. The Kenyan IT services sector has no well-defined way of measuring the quality of its products and services. Only four ICT firms were ISO certified in 2010. To address the limited uptake of quality certifications, the Kenya ICT Board plans to introduce a localised software certification programme in 2013. Given the insignificant adoption of formal quality certifications by IT services firms, the acceptance of quality certifications as proof of quality other than previous work would have limited value.

Software design that facilitates local firms' participation

Kenya has not yet developed and established a comprehensive e-government interoperability framework or a set of standards. The absence of such a framework hampers data sharing, the transfer of documents, and the exchange of information across organizations and systems. One of the roles of the e-Government Directorate is to define IT and interoperability standards. Interviews revealed that the main barriers to increased interoperability levels in Kenya

are not technical but organizational issues, such as lack of collaboration among different units, resistance due to perceived loss of control over information and security considerations.

The E-Government Directorate has taken some initiative to adopt modular architecture for its shared services. The implementation of a systems-wide modular architecture requires considerable investment and coordination that has not yet been forthcoming.

The Government does not have an explicit policy promoting FOSS in the public administration and the use of FOSS solutions in the administration has so far been limited. The regulatory framework (including the PPDA³¹ and the Kenyan ICT sector policy guidelines³²) provides the basis for a level playing field for proprietary software and FOSS suppliers. For instance, the Kenyan ICT sector policy guidelines of 2006³³ “encourage[s] [...] increasing awareness among stakeholders of the opportunities offered by different software models, including proprietary, open-source and free software”. However, interviews with firms revealed that public institutions express a preference for “tested” proprietary software. Public administrations are often locked into the use of proprietary software solutions and technologies (e.g. Microsoft dominates office software) and few public procurement offices have embraced open source alternatives. A study commissioned by the Linux Professional Association of Kenya in 2010³⁴ notes that, although there has been some improvements, many public tenders still do not conform to official regulations and favour proprietary software. For instance, contrary to Art. 34 of PPDA, technical requirements in public tenders often refer to a particular trademark, name, producer or service producer. The report provides two additional reasons for the wider preference for proprietary software in the public administration: limited familiarity with FOSS among procurement officers and a reported shortage of advanced FOSS skills in the market. In September 2012, the e-Government Directorate indicated its intention to progressively migrate its IT operations to FOSS.³⁵

Awareness raising and capacity development for local firms and public sector officials

Interviews with the Kenya Institute of Supplies Management revealed that, although significant efforts have been made in training and certifying procurement officers, there is limited awareness of state-of-the-art procurement techniques and tools that could improve transparency and SME participation.

SMEs have large capacity weaknesses. The majority of SMEs in Kenya lack the necessary skills to participate in public procurement processes, in particular to prepare relevant tender documents. Limited understanding of public procurement systems often results in submission of non-compliant bids. The Kenyan Institute of Supplies Management and the PPOA have

on-going initiatives to address these capacity gaps, which are yet insufficient to substantially increase SME participation in public procurement.

Table 10 provides an overview of the ICT public procurement strategies that have been applied in Kenya and a preliminary assessment of their impact.

Table 10. Procurement strategies adopted in Kenya

	Has the strategy been applied in Kenya?	Impacts, comments
1. Establishing the basics		
Public procurement as part of IT sector promotion strategies	No. The National ICT Policy of 2006 and its revised version of 2012 promote the local ICT sector but it does not consider the role of public procurement.	Efforts have focused on the promotion of ITES exports. Public procurement is not yet leveraged to stimulate local IT services firms.
Critical mass of IT-related procurement	Yes. National county connectivity programs and community development learning centres. E-government services include a citizen portal, shared e-services (HR, customs, IFMIS, tax, ID and passport issuance) and other planned projects (pension administration, driver licensing, land title and company registration systems). IFMIS (Integrated Financial Management Information System), an Oracle-based ERP, is the largest e-government project. The draft ICT Master Plan 2012-2017 includes e-government as one of the three strategic pillars of the national ICT strategy.	E-government programmes represent a window of opportunity. Donors play a key role given their financial participation in such programmes.
Understanding the current state of the local IT services industry	No. Comprehensive data on local firms are not available.	New SME legislation is expected to provide the legal framework for (and encourage) the registration of SMEs. This may help developing a registry of local ICT firms.
2. Strengthening the institutional framework		
Coordination across the public sector and the industry	Moderately. Some level of coordination between Kenyan Institute of Supplies Management and the Public Procurement and Oversight Authority (PPOA). Limited coordination between public sector stakeholders (e.g. the ICT and procurement departments). Fragmented ICT industry associations.	The legislative framework calls for coordination but, in practice, coordination is limited.
Agency/department spearheads public procurement for local IT sector development	No. Different authorities (i.e. Directorate of e-Government, Ministries) procure ICT goods and services internally without coordination at the national level.	Limited interaction between the key procurement entities like the PPOA and the relevant ICT bodies (the Ministry of Information and Communication, the Directorate of e-Government and the Kenya ICT Board).
3. Promoting good procurement practices		
Implementing transparent and open tender procedures	Moderately. PPOA has produced a manual on technical specifications and a tender template. The E-government Directorate plans to develop templates for ICT technical specifications.	Difficulties in accessing tender information and delays in procurement processes, including payment, hamper SMEs participation. The PPOA manual is not used widely by SMEs. Adequate human resources have not been allocated to develop templates for ICT tenders.
Deploying e-procurement systems	Not yet. E-procurement is planned to be implemented as a module of IFMIS.	There have been delays in launching the new IFMIS.

Table 10. Procurement strategies adopted in Kenya (*continued*)

4. Limiting market entry for foreign bidders		
Exclusion of foreign bidders	No. The legal framework allows the provision of exclusive preference to local SMEs in certain circumstances (where the funding is 100% from the Government of Kenya or a Kenyan body; and the amounts are below the prescribed threshold. (Art. 39 PPDA)), but this is not applied in practice.	Inadequate understanding and implementation of the Public Procurement and Disposal Act (PPDA), inconsistent implementation of strategies related to procurement rules.
Allocation of preferential marks for local experience, local language and local presence	No. The legal framework gives explicit preference to the participation of local ICT firms (Art. 39 PPDA), but it is not applied in practice.	Inadequate understanding and implementation of the PPDA, inconsistent implementation of strategies related to procurement rules.
5. Mitigating the effects of information asymmetries in procurement		
Concessions on bid and performance guarantee requirements	No. Art. 57 of PPDA allows procuring entities to require tender security and to determine the form and amount of the guarantee requirements.	Use of guarantee requirements is at the discretion of the procuring entity. In practice, no concessions on guarantee requirements are used.
Accepting proof of quality other than previous work	No. Kenyan ICT sector has no well-defined way of measuring the quality of its products and services. Only four IT firms were ISO certified in 2010. The Kenya ICT Board plans to introduce a localized software certification programme in 2013.	No industry association supports the attainment of standards.
6. Software design that facilitates local firms' participation		
Promoting interoperability and open standards	Limited use. Currently in the planning stage. To define interoperability and standards is one of the roles of the e-Government Directorate.	
Modular design of IT systems in the public sector	Limited use. Some initiatives by the E-Government Directorate have been taken to adopt modular architecture for its shared services.	Full implementation requires considerable investment and coordination that has not yet been forthcoming. More systematic treatment needed.
Promoting FOSS	No. Kenya does not have an official policy supporting FOSS. In September 2012, the e-Government Directorate indicated its intention to progressively migrate its IT operations to FOSS.	Vendor lock-in, widespread presence of proprietary solutions, and lack of adequate human capacity limit the uptake of FOSS.
7. Awareness raising and capacity development for local firms and public sector officials		
Awareness raising and capacity development for local firms and public sector officials	Moderately. The Kenyan Institute of Supplies Management provides training and certification to public procurement officials and it envisages providing training for SMEs and raising awareness of public procurement provisions.	Lack of funding and inadequate coordination has limited the reach of the capacity development activities.

Source: UNCTAD and BMZ.

1.2 SENEGAL

1.2.1 ICT market and sector characteristics

The Senegalese ICT sector is among the most dynamic in West Africa.³⁶ Private estimations suggest that the telecommunications sector represents around 6 per cent of the country's GDP.³⁷ ICT-related manufacturing is insignificant, and the IT services sector is small but growing, comprising 50–100 software developers and IT services providers involved in applications development (InfoDev, 2008).

Software development is often performed by units or departments within larger IT and ICT groups, such as Seninfor, FTF and Groupe Chaka, but also by a growing number of small specialized firms, such as GSIE Technologie, Sen-Site, Synapsys Conseil, and GCS (InfoDev, 2008). Many of these companies deliver basic software development and IT services for outsourcing contracts with French companies.

According to InfoDev (2008), most ICT service providers (including web designers, Internet value added service providers, and ICT consultants) do not have the capacity or capability to operate on the international market. Since the domestic market is quite narrow, this

segment is still at an embryonic stage. The West African market, however, presents a good opportunity for Senegalese firms. For instance, a mapping of the ICT sector in Senegal commissioned by GIZ on behalf of BMZ (GIZ/OPTIC 2012) found that, within the broader ICT and ITES industry, 53 per cent of the firms serviced the regional market. Moreover, the report found that, despite most of them being SMEs, 36 per cent of Senegalese ICT firms serviced the global market – suggesting a greater level of internationalization than indicated in the InfoDev (2008) report. Many SMEs in the industry operate in the informal sector, are rapidly established and often disappear within a short period of time (GIZ/OPTIC 2012).

The Organization of Professionals of Information and Communication Technologies (OPTIC) is the only ICT industry association in Senegal. OPTIC is a member of the National Council of Employers and includes the main ICT companies and telecommunications operators. OPTIC works closely with the Government on policy issues and provides a platform for public-private dialogue and the promotion of partnership and investment.

1.2.2 Public procurement strategies

Establishing the basics

National policies in Senegal promote ICT both as a key economic sector as well as a tool for improving the functioning of the public administration and for facilitating access to public services.

The new Public Procurement Code (CMP) defines favourable conditions for the participation of Senegalese and West African Economic and Monetary Union enterprises in public procurement. However, the expected positive impact of this legislation has so far been limited. The legislation is relatively new and requires reconciliation with older codes to ensure a coherent approach to public procurement.

The Government has forged a comprehensive collaboration programme with the German Government to increase the competitiveness of Senegalese SMEs in the ICT sector (among other sectors) (see box 8). This is a medium term project – which may need to continue for several years.

Senegal has a critical mass of IT-related public procurement. The State Agency for Informatics (ADIE) manages various e-government projects such as connection of courts and the national ID project. Other projects exist in e-education, e-health and e-trade. GAINDE 2010, a customs management system, is an advanced system managed by the government. A port community system is planned.

According to the study commissioned by GIZ on behalf of BMZ (GIZ/OPTIC 2012) (and based on the data available in the public procurement portal), between 2008 and 2010, the public administration procured 5.6 billion CFA francs (\$11 million) annually on ICT goods and services (see Table 11, GIZ/OPTIC 2012). The Ministry of Economy and Finance was the top procurer, followed by the Ministry of Urban

Box 8. Donor's role in promoting SME participation: the example of the Senegalese-German cooperation.

The Government has forged a comprehensive collaboration programme, “Promoting the competitiveness and growth of small- and medium-sized enterprises and capacity development in the microfinance sector”, with the German Federal Ministry for Economic Cooperation and Development to increase the competitiveness of Senegalese SMEs.³⁸ The multi-year programme (2006-2015) focuses on the promotion of the ICT sector as one of the priority sectors defined by the Senegalese Government. In this regard, it aims at improving the participation of SMEs in public procurement, at establishing a good understanding of the local ICT sector (including the creation of a registry for local ICT firms), and at promoting an interoperability and standards framework for public sector organisations. Small Senegalese ICT firms are among the main beneficiaries of the project.

The program's main approach is to promote public-private dialogue with the aim to define and implement joint solutions to the challenges faced by small enterprises because of an unfavourable business and investment climate. It promotes and supports cooperation between ministries, governmental and non-governmental organizations, as well as with the private sector.

To date, the programme has carried out an extensive survey in collaboration with the Organization for ICT professionals (OPTIC) to map the state of the ICT sector in Senegal. It has also supported the Senegalese government in identifying the major challenges to SMEs participation in public procurement and in promoting government systems interoperability. Further activities to address these challenges will be implemented during the course of the program.

Source: BMZ.

Development and Public Health and the Ministry of Technical Education and Professional Training.

While not all related public procurement are reported in the portal (GIZ/OPTIC 2012), the study reveals a high level of supplier concentration in the provision of ICT services to the public sector. Out of the 75 domestic firms participating in ICT public procurement, three firms accounted for 41.7 per cent of the total ICT public procurement between 2008 and 2010.

Senegal relies on donor funding for the implementation of a significant amount of ICT and e-government-related projects (see Table 12). While some donor projects (for example, the University Cheikh Anta Diop (UCAD)/ADIE project for connection of courts) have involved local firms, the majority of the projects were executed exclusively by foreign firms (see Table 12). The demand to procure the latest and best solution has also favoured international firms.

Table 11. Public procurement of ICT equipment/services, Senegal (2008-2010), in thousands dollars

Authority	2008	2009	2010	Total
Ministry of Finance and Economic Development (Tax Directorate)	360	2'316	4'241	6'916
Ministry of Urban Development and Housing	3'934	-	-	3'934
Ministry of Finance and Economic Development - Information Management Directorate (DTAI)	819	708	775	2'303
Ministry of Technical and Vocational Education	-	1'586	531	2'118
Ministry of Finance and Economic Development - Economic and Financial Cooperation Directorate (DGF)	195	642	919	1'754
Ministry of Finance and Economic Development - Customs Director General (DGD)	1'200	-	-	1'200
Ministry of Finance and Economic Development - Directorate of Administration and Equipment	-	791	-	791
Ministry of Finance and Economic Development - Customs Director General (DGD/DPL)	-	-	789	789
Ministry of Finance and Economic Development - Customs Director General (DGD)/DPL/BSB)	-	766	-	766
State Agency for Informatics	697	-	-	697
Ministry of Finance and Economic Development (DSPRV)	-	689	-	689
Ministry of Finance and Economic Development (CEPDPS)	622	-	-	622
Ministry of Education for Pre-School, Elementary & Intermediate Levels Education	146	79	337	561
Ministry of Armed Forces	464	-	-	464
Ministry of Finance and Economic Development (PCRBF)	98	350	-	447
Ministry of Health and Public Hygiene	-	447	-	447
Chief Cabinet Secretary (SAGE)	218	220	-	439
Ministry of Technical and Vocational Education	-	323	102	425
Deposits and Consignments Fund	-	368	-	368
Ministry of Interior (DBM)	167	92	98	358
Total	10'795	11'489	10'936	33'222

Note: Exchange rate: 1 \$ = 508.126 CFA Francs

Source: GIZ/OPTIC (2012).

Table 12. List of IT projects in the public administration, Senegal

Ministry/ Public entity	Project name	Description	Participant country	Financing/ Tender type
State Agency for Informatics (AIDE)	SAFI	Government Intranet project, Internet sites and national portal	Governments of the Republic of Korea and China	External financing. International call for tenders under the partnership agreement (China/ Korea)
Ministry of Economy and Finance	SYGMAP	Procurement management system, a software for monitoring procurement value chain	Financed by the Government of Senegal	Internal financing. Open call for tender (national)
Ministry of Economy and Finance-DTAI		Payroll management system	Tunisia	External funding (World Bank)/ International call for tenders
Ministry of Economy and Finance	ASTER	Public financial and accounting system	France	International call for tenders under the partnership agreement
Ministry of Economy and Finance	Gaïnde ORBUS	Integrated customs system.	Senegal	Establishment of a firm (GIE Gaïnde 2000 for ORBUS) and internal IT staff from the Customs Directorate (for GAINDE)
Ministry of Economy and Finance	SIGFIP	Integrated public finance management system	Cote d'Ivoire	International call for tenders under the partnership agreement
Ministry of Economy and Finance	SIGTAS	Internal finance/tax management system	Canada	External financing /international call for tenders
Ministry of Public Administration	GRH	Human resources management database	Senegal	Internal financing / national call for tenders
Ministry of Interior	National ID Project	A national identity card, electoral list, passport	Senegal/ Malaysia	Internal financing / open call for tender and within the partnership agreements
Ministry of Justice		- Connection of courts (carried out with AIDE) - Development of an application for judicial authorities (carried out with the University Cheikh Anta Diop (UCAD))	Senegal (UCAD/AIDE)	External financing (European Union)

Source: Based on Brunsiek and Restel (2011) and communications from Ministry of Economy and Finance.

Partly because of the informality and rapid turnover of SMEs in the sector, there is limited information available on the portfolios and capabilities of ICT firms in Senegal. This constrains decision makers (both private and public actors) in designing strategies for the development of the sector. To address this shortcoming, the Senegalese-German SME Competitiveness Programme is in the process of developing further mapping mechanisms for the sector. Public officials participate in the on-going dialogue between IT companies and public institutions in collaboration with the industry association OPTIC.

Institutional framework

There is limited coordination among institutions involved in IT-related public procurement. The State Agency for Informatics (Agence de Développement de l'Informatique de l'État -ADIE) is responsible for

the national e-government strategy, the automation of public sector institutions, and the development of an e-government architecture and interoperability framework. However, Ministries, Departments, and other government entities are generally independent in the way they acquire products and services.

Strong leadership could enhance policy coherence and coordination among public institutions.

There is no agency spearheading public procurement for local IT sector development. While ADIE is responsible for the national e-government strategy, the automation of public sector institutions and the development of an e-government architecture and interoperability framework, it does not coordinate public IT procurement. Different ministries and departments purchase IT independently. Some of these tenders are overseen by DCMP, but there is limited coordination between ADIE and DCMP.

Promoting good procurement practices and other measures supporting SME participation in public procurement³⁹

Senegal has established sound policy, institutional, and legislative frameworks for public procurement and has updated the corresponding laws. In 2008, an auto-evaluation of its overall public procurement system based on the OECD-DAC methodology situated Senegal in the group B (A-best performance, D-weakest performance).⁴⁰ The most important legal document in the context of public procurement is the Public Procurement Code (Code des marchés publics – CMP) enacted in 2011.

An institutional framework for managing and overseeing public tenders has also been set up. The Central Department for Public Procurement (DCMP) is responsible for overseeing key public procurement projects a priori and the Public Procurement Regulatory Agency (ARMP) for overseeing projects a posteriori and for regulation.

The CMP includes various provisions for the promotion of local SMEs and defines the following measures:

- Breaking down large tenders into smaller packages to encourage SMEs participation.
- Local and West African Economic and Monetary Union (WAEMU) SMEs can be given preference provided they have equivalent qualifications and are not more than 15 per cent more expensive than international applicants.
- Tender guarantees are not required for software and computer services or for group biddings when the volume of the contract is below \$100,000.
- All bids should be evaluated transparently on the basis of consistent selection criteria and rejected candidates must be informed.

A number of supplementary criteria apply to the tender of Intellectual Services (including IT services):

- Only preselected suppliers can bid.
- The technical quality of the offer (both in terms of firms' experience and the technical dimension of the proposal), and not only the price, is a key evaluation criteria.

However, tenders for purchases that involve both the acquisition of IT goods and services are often classified as equipment tenders and do not include the additional criteria for intellectual services. As a consequence, these tenders may not include the necessary elements that would allow interested suppliers to fully evaluate the tender.

Notwithstanding the provisions for the promotion of local SMEs, the participation of these firms in the public procurement system has so far been limited. Main barriers include:

- Complex legislation, where procedures and provisions are distributed over different laws and regulations. SMEs usually lack the expertise or resources to understand the overall procedure;
- Prerequisites for bidding, such as evidence of at least three years' experience, tender guarantees in the case of tenders for ICT goods, or the necessity to purchase tender documents;
- Unclear technical specifications prevent the submission of a competitive bid; and
- Missing feedback in cases where bids were rejected.

The Government has taken steps to increase transparency by ensuring that public tenders are available through a central web site – www.marchespublics.sn.

It is unlikely that the public administration will accept proof of quality other than previous work (i.e. quality certifications) since there is limited progress on certification of firms in the IT services sector.

Software design

Senegal has not yet published an interoperability framework or architectural standards. As mentioned earlier, ADIE is responsible for the development of an e-government architecture and interoperability framework. However, the lack of coherent and consistent guidelines for ICT and e-government-related projects on the part of the government, as well as a lack of coordination among donor organizations has resulted in the purchase of heterogeneous ICT systems, creating interoperability problems.

With the support of the Senegalese-German cooperation program (see box 8), the government has taken steps to promote IT standards and interoperability framework between public institutions. The lack of financial resources and technical capabilities and the limited use of ADIE for promoting IT standards and interoperability framework have stalled progress in this area, however.

The Government has also taken some practical steps to encourage the use of open source software in the public sector. ADIE has set an example by using open source software for its operations. It runs Linux on its file, e-mail and directory servers and uses MySQL AB's open-source database. Its enterprise resource

planning solutions also run on Linux servers.⁴¹ Despite the encouragement by ADIE and universities to use FOSS, there is a lack of adoption of FOSS by public institutions, in which there is still a tendency to prefer proprietary software. The absence of a critical mass of FOSS developers in the public sector and of technical support, as well as the lack of a clear policy supporting the use of FOSS in the public sector, explain the limited uptake of FOSS in public institutions in Senegal (as is the case also in other West African economies).⁴²

Awareness raising and capacity building

The Government has implemented a number of training courses and seminars, provided by DCMP and

ARMP. For instance, in cooperation with Germany (and possibly other donors), a training course is planned for government officials involved in public procurement to improve the technical specifications of IT tenders.

The government has an annual training plan for capacity building in public procurement. Since 2008, over 6,000 actors have received training.⁴³ However, interviews with stakeholders indicated capacity weaknesses among stakeholders in regard to public procurement of IT services.

Table 13 summarizes how the seven broad strategies described in chapter 3 have been applied in Senegal.

Table 13. Procurement strategies adopted in Senegal

	Has the strategy been applied in Senegal?	Impacts, comments
1. Establishing the basics		
Public procurement as part of IT sector promotion strategies	<p>Yes. National policies in Senegal promote ICTs both as a key economic sector, and as a tool for improving the functioning of the public administration and for facilitation of access to public services.</p> <p>The Public Procurement Code (CMP) enacted in 2011 defines favourable conditions for the participation of Senegalese and WAEMU SMEs in public procurement.</p> <p>The Senegalese-German SME competitiveness programme supports the participation of SMEs in public procurement.</p>	<p>Actual focus is on promoting the export of BPO services.</p> <p>The legislation is relatively new and requires reconciliation with older codes to ensure a coherent approach to public procurement</p> <p>Medium term project – may need to continue for several years.</p>
Critical mass of IT-related procurement	<p>Yes. The State Agency for Informatics (ADIE) manages various e-government projects such as connection of courts and the national ID project. Other projects exist in e-education, e-health and e-trade. GAINDE 2010, a customs management system, is an advanced system managed by the Government.</p>	<p>Local firms are encouraged to participate in national e-government projects. Most donor-funded projects, however, are biased towards international firms.</p>
Understanding the current state of the local IT services industry	<p>Moderately. The Senegalese-German SME Competitiveness Programme has developed a mapping of the ICT sector in Senegal.</p>	<p>Lack of well-defined national plan for registration of SMEs.</p>
2. Strengthening the institutional framework		
Coordination across the public sector and the industry	<p>Moderately. There is limited coordination among institutions involved in ICT-related public procurement.</p> <p>Public officials participate in the on-going dialogue between IT companies and public institutions in collaboration with industry association OPTIC.</p>	<p>Lack of leadership for coordination of public ICT procurement and inadequate linkages between ICT policy and public procurement policy.</p> <p>Dialogue with private sector is not regular.</p>
Agency/department spearheads public procurement for local IT sector development	<p>No. ADIE is responsible for the national e-government strategy, the automation of public sector institutions, and the development of an e-government architecture and interoperability framework. ADIE does not coordinate public IT procurement. Ministries and departments purchase IT independently. Some tenders are overseen by DCMP.</p>	<p>Limited coordination between ADIE and DCMP.</p>

Table 13. Procurement strategies adopted in Senegal (*continued*)

3. Promoting good procurement practices		
Implementing transparent and open tender procedures	Limited. Initiatives are underway for improving good procurement practices. The CMP promotes good procurement practices and the web portal aims to increase transparency. The Senegalese-German SME competitiveness programme outlines measures for enhancing the quality of technical specifications.	The 2008 auto-evaluation score of its overall public procurement system is B (A-best, D-weakest). Interviews suggest that lack of awareness, inadequate technical content of tendering documents, and limited feedback on tender evaluation outcomes are some of the challenges ahead.
Deploying e-procurement systems	Limited. DCMP has established a portal for public tenders www.marchespublics.sn .	Not all public tenders have been published online.
4. Limiting market entry for foreign bidders		
Exclusion of foreign bidders	No.	
Allocation of preferential marks for local experience, local language and local presence	Yes. The legislative framework (CMP) provides for awarding contracts to qualified local SMEs even if the offer price is 15 per cent higher than that of a qualified foreign firm.	The CMP was adopted in 2011 but has not been fully implemented. Its impact in encouraging the participation of local ICT enterprises has yet to be seen.
5. Mitigating the effects of information asymmetries in procurement		
Concessions on bid and performance guarantee requirements	No. No progress has been made in removing bid guarantee requirements. The Senegalese-German SME competitiveness programme outlines measures for reducing onerous requirements.	The CMP and older codes still include onerous requirements such as a security deposit of 1-3 per cent for hardware and 5 per cent of the procurement of goods and services exceeding \$ 100,000. Firms are still required to submit evidence of at least three years expertise in same area and a detailed turnover of the last three years.
Accepting proof of quality other than previous work	No.	Limited progress on certification of firms. No formal plan exists to encourage certification or quality control of professionals and firms in the ICT sector.
6. Software design that facilitates local firms' participation		
Promoting interoperability and open standards	Limited. With the support of the German-Senegal SMEs competitiveness programme, the government has taken a series of actions to promote an interoperability and standards framework.	Lack of financial resources and technical capability. Limited utilization of ADIE for promoting an interoperability and standards framework.
Modular design of IT systems in the public sector	Limited. With the support of the German-Senegal SMEs competitiveness programme, the government has taken a series of actions to promote an interoperability and standards framework.	Lack of financial resources and technical capability. Limited utilization of ADIE for promoting an interoperability and standards framework.
Promoting FOSS	Limited. ADIE and universities encourage the use of FOSS.	Despite the encouragement by universities and ADIE, there is a lack of adoption of FOSS by public institutions and absence of a critical mass of FOSS developers in the public sector. Tendency to prefer proprietary software over FOSS.
7. Awareness raising and capacity development for local firms and public sector officials		
Awareness raising and capacity development for local firms and public sector officials	Limited. The government has an annual training plan for capacity building in public procurement. In cooperation with Germany (and possible other donors) a training course for government officials involved in public procurement to improve the technical specifications of IT tenders is being planned.	Insufficient capacity development and inadequate coordination between agencies. Interviews with stakeholders indicate capacity weaknesses among stakeholders in regard to public procurement of IT services.

Source: UNCTAD and BMZ.

1.3 SRI LANKA

1.3.1 ICT market and sector characteristics

In 2009, Sri Lanka's ICT sector contributed 1.7 per cent to the GDP (down from about 3.04 per cent in 2007), and was the largest contributor to GDP growth (Central Bank of Sri Lanka, 2007 and 2010).

Exports of software products and services dominate the IT industry. They have generated over \$250 million in revenues in 2011, up from \$161 million in 2010 (54 per cent growth) (PWC, 2011). Export revenues are almost evenly split between software products and services (unlike neighbouring India in which exports are dominated by software services). The production of software products is an important factor for ICT sector development, because it contains more value addition and can bring intellectual property based revenues in the long term.

As in the other two countries, there is no significant ICT manufacturing, though some assembly work takes place for computer and peripheral equipment.

In 2010, the IT sector in Sri Lanka comprised 147 companies engaged in exports: 90 of them were small (less than 40 employees), 34 were medium sized (40-100 employees) and 23 had more than 100 employees. These companies employed over 10,000 people, 25 per cent more than in 2009 (PWC, 2011). In 2011, the Economist Intelligence Unit ranked the Sri Lankan IT industry 56th in overall competitiveness out of 66 countries (as a point of reference, India was ranked 34th)⁴⁴.

While some firms only produce software for exports, many other firms, large and small, target the local market and have local clients in the private and public sector. The reasons for targeting the local market include diversifying sales geographically to mitigate income fluctuations, and acquiring experience in government e-service systems as a reference for future bids for international projects.

The largest industry association is the Software Exporters Association. However, the most relevant association to support the development of smaller local IT firms is the Federation of Information Technology Industry Sri Lanka (FITIS), an umbrella organization representing the interests of more local ICT firms.

1.3.2 Public procurement strategies

Establishing the basics

The Government of Sri Lanka has clearly placed public procurement as part of IT sector promotion strategies, particularly in the context of the e-Sri Lanka Initiative.

The e-Sri Lanka Initiative, a large ICT-enabled development program established in 2003, includes a Private Sector Development Program (PSDP). While the visible activities of the PSDP have focused almost exclusively on exports (i.e. promoting Sri Lanka as a premier destination for IT and ITES outsourcing), the initial design of e-Sri Lanka/ICTA took into account the need to promote local firms during e-government project procurement.

Sri Lanka has a critical mass of IT-related procurement. The e-Sri Lanka Initiative was budgeted at around \$83 million, with \$53 million funded by the World Bank, and the remainder by the Government of Sri Lanka and other donors. Another additional \$50 million have subsequently been allocated by the World Bank. A key pillar in the e-Sri Lanka Initiative was the Re-Engineering Government Program, whose aim has been to reform public sector processes and to bring public services online. So far, about 40 per cent of the initial e-Sri Lanka budget (or around \$32 million) have been allocated to the programme and disbursed to procure IT services and IT equipment. The program includes a number of projects for automating public sector processes (e.g. ePensions, eRevenue License, eSamurdhi (social protection payment scheme)), for creating large data repositories to be used by these automated processes (e.g. ePopulation Register, Land-registry) as well as a broadband network – the Lanka Government Network – that connects public sector organizations across the country. In addition, funding for common services such as a Government Internet Data Center and payment gateways are provided under the project, as is funding for the websites of most public sector organizations.

The total ICT budget for the public sector is not published and is difficult to estimate. Many public sector funded projects have IT components, large or small. The \$32 million for e-Government has been financed by the World Bank, other donors and the Government of Sri Lanka. The Asian Development Bank (funding a large IT in Education initiative), the United Nations Development Programme, and the Japanese International Cooperation Agency have also funded IT projects in the public sector of Sri Lanka. In addition,

the Government uses its own funds for the procurement of IT goods and services, independent of the e-Sri Lanka initiative.

The Government of Sri Lanka has made clear efforts to understand the current state of the local IT services industry and coordinate with the sector. Surveys and publications on the IT sector and its workforce are available.

Strengthening the institutional framework

ICTA has a clear leading role for e-government projects. The handling of a large volume of e-government projects as well as its level of authority to set policy on technical matters, has enabled ICTA to take a visible and leading role in promoting e-government and encouraging the participation of local ICT firms in public sector tenders.

The public sector has formal and informal interactions with multiple industry associations. Meanwhile, coordination across the public sector takes place only to a limited extent. For instance, while the 2011 budget specified that all ICT procurements should go through ICTA, this does not always happen in practice. Strategies coordinated and implemented through ICTA are seen as positive by interviewees, even though not all government organizations adhere to them.

Promoting good procurement practices

While the World Bank procurement practices used by ICTA are perceived to be burdensome, almost all the interviewees claimed that they were fair and transparent. Some found that the World Bank's procurement practices (as implemented by ICTA) were the most straightforward because the process is documented and published, the contract conditions are published along with the call for tenders, and the requirements are clearly spelled out. Government-funded procurements were considered opaque. During interviews, examples were cited of large firms with the "right connections" having won government-funded tenders that provided outdated technology or did not provide value for money. For these reasons, many of the interviewees, including those that have unsuccessfully bid for ICTA tenders, have indicated a clear preference for participating in ICTA's tenders over other public projects.

Promoting local SME participation in public procurement

ICTA has had remarkable success in assisting local IT firms win key tenders. Table 14 contains information on 13 key e-Services procured by ICTA. Of those tenders, all but one included at least one local partner

in the winning bid. Local firms (either individual firms or joint ventures of two or more local firms) have won seven of the tenders. The other five were awarded to joint ventures between local and international firms.

In 2005, the Ministry of Finance issued a circular (a directive issued to all public sector organizations) stating that "All Public Sector Agencies, including state banks and corporations, should ensure a minimum of 50 per cent value addition from a local partner in Sri Lanka, if the software is bought from a foreign supplier".⁴⁵ During interviews, however, it became clear that many stakeholders were not aware of the policy. Those that were aware of it were the IT industry professionals that had been involved in the lobbying activities leading to it, and the procurement professionals within ICTA. However, all those interviewed recognized that the circular has not yet been effectively implemented. No tenders meeting the above mentioned requirement could be found. In its current form, the directive may not be practical because, as industry experts claim, the 50 per cent value addition is too high a bar to cross. For example, local systems integrators say they can rarely add more than 15 per cent in value on a project if the software is licensed from overseas. Moreover, foreign funded IT projects are ruled by bilateral agreements which prevent the implementation of such 50 per cent local value addition clause.

ICTA has also successfully used the opportunities available to provide domestic preference within internationally competitive bidding. In tender evaluations, ICTA has regularly allocated marks (up to 15 per cent of the total marks, as allowed by World Bank rules) to domestic firms (i.e. those registered as firms under the laws of Sri Lanka). This practice has promoted joint ventures between international and local firms which, over time, have encouraged knowledge transfer and technological learning by local firms. Interviews with industry stakeholders show instances where a local firm acting as junior partner in a joint venture initially started providing only basic technical support to the client after system implementation. However, during a second implementation of a similar system, the firm was able to handle more complex technical support, thus increasing local value addition.

Concessions on bid and performance guarantee requirements are not made in public sector tenders. Potential bidders do not necessarily consider such guarantee requirements to be a barrier to entry. On the other hand, quality certifications have been accepted as proof of quality. Quality certifications are increasingly common among firms in Sri Lanka. The majority

of ICT exporting firms have some quality certification (PWC, 2011).

Technology-related strategies adopted by ICTA are paving the way for local SMEs to participate in tenders. These include the incremental deployment of interoperability standards and the implementation of a modular e-government architecture. The small size of each module has resulted in tenders more attractive to SMEs and local firms with specific expertise. However, no official policy supporting FOSS use in the public administration appears to exist. Interviewees cited significant lobbying by proprietary firms as a reason why a public sector FOSS policy had not been adopted.

To support the use of a modular e-government architecture, ICTA has adopted additional quality as-

surance mechanisms. For example, it has used third party tools⁴⁶ to track software faults. It has also started hiring separate quality assurance firms to ensure the quality of the software developed by the firms that won the tenders. ICTA established panels of senior experts and formed the Software Architecture Group of Experts (SAGE) committees. Each key e-Services project has a SAGE committee, which meets at regular intervals, especially during the software design phase. The vendor has to present its system design for evaluation and has to answer questions posed by the SAGE committee. A key factor that has enabled SAGE committees to improve the quality of systems being designed is that the members of each SAGE committee have been handpicked for their expertise and include some of the top experts in Sri Lanka.

Table 14. Major IT system procurement projects carried out under e-Sri Lanka e-Government program

	Project/system for which procurement was carried out	Number of parties submitting Expression of Interest (stage 1)	Final contract awarded to...	Contract value (\$)	Use of marks for local presence or local expertise in evaluation (in stage 1 or 2)
1	ePensions [Automation of government employee pension payments]	2 firms	JV of 3 firms (2 local and 1 int'l)	1'230'769*	Yes, 5%
2	eServices Quick Win [Pilot project for proof of concept]	14 firms (2 JVs)	JV of 2 firms (1 local and 1 int'l)	84'615*	Yes, 5%
3	Lanka Gate eServices Project	10 firms (4 JVs)	1 local firm	51'294*	Yes, 5%
4	Lanka Gate eServices projects for Department of Examinations and National Water Supply and Drainage Board	16 firms(3 JVs)	JV of 2 firms (1 local and 1 int'l)	71'132*	Yes, 5%
5	Lanka Gate eServices projects for Department of Immigration and Emigration and Bureau of Foreign Employment	14 firms (2 JVs)	JV of 2 firms (1 local and 1 int'l)	71'151*	Yes, 5%
6	Sahana Disaster Management System for the National Disaster Relief Services Centre	10 firms (6 JVs)	JV of 2 local firms	67'654*	Yes, 5%
7	e-Divisional Secretariats [Regional government administrations]	6 firms (3 JVs)	1 int'l firm	721'692	No
8	eHRM [e-Human Resource Management]	5 firms	JV of 3 local firms	205'014*	Yes, 10%
9	e-Samurdhi – HRM Module [Samurdhi is the social welfare payment system]	16 local firms; 4 int'l firms; 1 JV (local + int'l)	1 local firm	79'000	Yes, 15%
10	e-Samurdhi – CRM module	16 local firms; 4 int'l firms; 1 JV (local + int'l)	1 local firm	98'000	No
11	e-Samurdhi – PPM Module	16 local firms; 4 int'l firms; 1 JV (local + int'l)	JV with local lead partner	115'500	No
12	e-Samurdhi – SQA	4 local firms;	1 local firm	100'500	No
13	Provincial Land Management Information System	7 local firms	1 local firm	50'000	No

Note: JV = Joint Venture, int'l= International

(*) Value in \$ is approximated (based on an exchange rate of 1\$ = 130 LKR)

Source: ICT Agency of Sri Lanka.

Box 9. Public procurement of ITES supports local firms in Sri Lanka

In contrast to Kenya and Senegal, the Sri Lankan ITES sector is smaller than the software sector (while also being dominated by exports). In 2010, the ITES export sector had generated only \$60 million in revenue, with 28 firms engaged in activities (PWC 2011). There is little local outsourcing by Sri Lankan firms to firms that are not part of the parent company group.

The public sector is not a frequent user of BPO. However, one exception is the Government Information Centre (GIC) that was established in 2006 to handle citizen calls related to various public services. Instead of creating a new call centre staffed by public sector employees, the private sector was invited to bid for the contract to operate the GIC. The logic behind this was that Sri Lanka had a large number of call centres already established that were serving the US and UK markets. The time difference meant that call centres were mostly unused during daytime, i.e. business hours when citizens would call to make queries about public services. The expected cost savings were a motivator for the procurement of private sector services for the GIC.

Source: UNCTAD and BMZ.

ICTA has also employed alternative public procurement processes and hired individual local consultants to serve a specific demand for IT services where agile software development⁴⁷ (a non-traditional approach to software development) was used. ICTA used a modified agile software development methodology to achieve the implementation of a high-level system at the Registrar General's Department in record time, and with a high level of end-user buy-in. The firm initially selected to implement the system had missed the deadlines and the project was about to be cancelled due to non-delivery. With some flexibility from the procurement team, ICTA was able to hire individual local consultants who were paid on a time basis (as opposed to a traditional procurement system that pays on an estimated total price). The software licenses and hardware required were purchased directly by ICTA. The availability of technical competency within ICTA enabled good project management. Such situations are ideal for highly competent individual consultants or SMEs. The projects offer lower financial risks because fees are based on actual efforts and not on (often inaccurate) estimates of system implementation cost.

Sri Lanka's public procurement strategies have promoted the growth of several privately-owned local IT services firms which are now able to serve international clients. Some of these examples include:

- A private sector firm that implemented several human resource management (HRM) solutions for the Government with ICTA/World Bank funding. Following that experience, the company invested further in the development of their HRM product. They were able to sell the product for a donor funded government project in Tanzania. The Tanzanian tender qualifying criteria required previous experience

not only in HRM products, but also with a government client on a donor funded project – all criteria that were fulfilled as the result of the experience in Sri Lanka.

- A private IT firm that implemented the border control system for the Department of Immigration and Emigration of Sri Lanka, well before ICTA started its projects, was able to use this experience as a reference to win similar work in Fiji and Mauritius.
- A document digitization and indexing firm that was awarded its first opportunity on an ICTA project and now engages with overseas clients.

Sri Lanka has also used existing local outsourcing capacities to save costs in the provision of services while at the same time supporting the development of a local industry, in this case the ITES industry (see box 9)

Awareness raising and capacity development for local firms and public sector officials

ICTA has conducted training workshops for local bidders on World Bank tender guidelines to address the fact that many non-compliant bids were being submitted to World Bank tenders (the non-compliance was often due to small technicalities). The activity was considered to be very useful by the local private sector, and ICTA has experienced a reduction in non-compliant bids.

While there is no formal capacity development strategy for public sector officials, some informal capacity development/knowledge transfer (on good practices) takes place as ICTA officials participate in the evaluation committees of other government organizations.

Table 15 describes how the seven broad strategies have been applied in Sri Lanka and the impacts of such practices.

Table 15. Procurement strategies adopted in Sri Lanka

	Has the strategy been applied in Sri Lanka?	Impacts, comments
1. Establishing the basics		
Public procurement as part of IT sector promotion strategies	Yes. The public procurement linked to the e-Sri Lanka Initiative has enabled participation of local firms. The Initiative includes a Private Sector Development Program (PSDP).	PSPD focuses on promoting export oriented software. Nonetheless, public ICT procurement has enabled significant participation of local firms (see Table 14).
Critical mass of IT-related procurement	Yes. Over \$32 million in e-government projects implemented by ICTA. Many other projects implemented by other public entities.	International donors play an important role in financing e-government projects.
Understanding the current state of the local IT services industry	Yes. The public sector has formal and informal interactions with multiple industry associations. Surveys and publications available on the sector and its workforce.	The largest industry association is the Software Exporters Association. However, the most relevant association to support the development of smaller local IT firms is FITIS, an umbrella organization representing the interests of more local ICT firms
2. Strengthening the institutional framework		
Coordination across the public sector and the industry	Moderately. Yes, in theory, but limited in practice.	The 2011 Budget specified that all ICT procurements would go through ICTA but in reality this does not always happen.
Agency/department spearheads public procurement for local IT sector development	Yes. ICTA, established in 2003, has a lead role.	Handling a large volume of e-government projects and its organizational mandate has enabled ICTA to take a visible and leading role. ICTA employs technically skilled staff
3. Promoting good procurement practices		
Implementing transparent and open tender procedures	Moderately. Yes for ICTA tenders.	Clear differentiation among interviewees about the transparency and quality of ICTA-run tenders. Not all public tenders are seen as transparent.
Deploying e-procurement systems	No.	No e-procurement tools or strategies have been utilized so far.
4. Limiting market entry for foreign bidders		
Exclusion of foreign bidders	Limited. In a few very low value contracts, the invitation to tender has been issued only to selected local firms.	
Allocation of preferential marks for local experience, local language and local presence	Yes. Eight out of 13 procurements done by ICTA had some component of domestic preference in the evaluation criteria (up to 15% of total marks). A Circular from the Ministry of Finance mandates "50% local value addition" on government ICT purchases.	Successful strategy in encouraging partnerships. Many tenders won by joint ventures with local partners. Most interviewees were unaware of the 50% value addition rule. All agreed that it is not implemented.
5. Mitigating the effects of information asymmetries in procurement		
Concessions on bid and performance guarantee requirements	No.	Some private sector interviewees view the guarantee requirements as barrier to entry, while a few do not share this sentiment.
Accepting proof of quality other than previous work	Yes. Tenders ask firms to state whether or not they have obtained specific quality certifications.	Certifications are increasingly common among firms: the majority of ICT exporting firms have some quality certification

Table 15. Procurement strategies adopted in Sri Lanka (*continued*)

6. Software design that facilitates local firms' participation		
Promoting interoperability and open standards	Yes. Incremental deployment of interoperability standards.	ICTA has a reasonable amount of authority to set policy on technical matters
Modular design of IT systems in the public sector	Yes. Overall government architecture design based on these principles.	Quick wins and proof of concept made possible due to design.
Promoting FOSS	No. No official policy exists – even though there is strong support within ICTA and an active FOSS community in the country	Interviewees cited significant lobbying by proprietary firms as a reason why a public sector FOSS policy has not been adopted
7. Awareness raising and capacity development for local firms and public sector officials		
Awareness raising and capacity development for local firms and public sector officials	Moderately. Workshops conducted for local firms by ICTA procurement advisors.	Industry claims that the workshops have been extremely useful. Public officials have also noted a reduction in non-compliant bids after each training session.
	No formal capacity development for public sector officials.	Some informal capacity development/ knowledge transfer (on good practices) takes place as ICTA officials participate in the evaluation committees of other government organizations.

Source: UNCTAD and BMZ.

The image is a composite of two parts. The top part shows a globe of the Earth with numerous glowing lines radiating from it, suggesting global connectivity or data flow. The bottom part shows a person in a suit sitting at a desk, signing a document with a pen. In the background, there are two laptops displaying world maps and data charts.

ANNEX 2. LIST OF PEOPLE INTERVIEWED

KENYA

Name

Dr. Khaterine Getao
Mr. Muriuki Mureithi
Mrs. Eunice Kariuki
Mr. Daniel Kimali
Mr. Henock Kirugu
Mr. Gilbert Saggia
Mr. Anthony Mwai
Mr. Bernard Wahome
Mr. John Kamau
Mr. Joseph Ogachi
Mr. Jeremiah Ogola
Mr. Mathias Muehle

Institution

ICT Secretary, Directorate of E-government
CEO, Summit Strategies
Deputy CEO, Kenya ICT Board
CEO, WADA KIO
Director of Research and Policy, Public Procurement Oversight Authority
CEO, East Africa, CISCO Systems
CEO, East Africa, IBM
CEO, Broadcom Kenya
Sales Manager, Broadcom Kenya
Executive Director, Kenya Institute of Supplies Management
Director of Training, Kenya Institute of Supplies Management
Component Leader Public Procurement, GIZ, Kenya

SENEGAL

Name

Mr. Pierre Lucante
Ms. Anja Kiefer
Dr. Olivier Sagna
Dr. Alex Corenthin

Institution

GIZ
GIZ
OSIRIS/CODESRIA
UCAD

SRI LANKA

Name

Mr. Mano Sekaram

Mr. Dinesh Saparamadu

Ms. Manori Unambuwa
Mr. Jayantha De Silva

Mr. Nirmal Peiris
Mr. Dilshan Silva
Mr. Wasantha Deshapriya
Mr. Kanishka Goonesekara
Mr. Kanchana Thudugala
Mr. D. C. Dissanayake

Mr. Gamini Karunaratne
Ms. Shahani Markus Weerawansa

Mr. Frederick Abeyratne
Mr. Dinuka Perera
Mr. Damith Hettihewa

Institution

CEO and Founder, 99x Technology (formerly called Eurocenter).
Director and General Secretary, SLASSCOM (industry association)
CEO, hSenid
Chairman Emeritus, SLASSCOM
Formerly Head of e-government Sales at Just In Time Technologies (JIT).
Director and Vice Chairman, IFS
Managing Director, Sri Lanka, IFS
Co-Managing Director, eWis
Project Manager, eWis
Program Director, e-Government, ICT Agency of Sri Lanka (ICTA)
Senior Manager, Informatics International
Program Head, e-Services, ICTA
Senior Program Head – Re-engineering Government & Administration and Operations, ICTA
Senior Procurement Manager, ICTA
Former Chief Technology Officer, ICTA (currently at the University of Moratuwa)
Team Leader, Poverty & MDG Cluster, UNDP, Sri Lanka
Former Head of Re-engineering Government, ICTA
CEO, FITIS (Federation of IT-industry associations in Sri Lanka)

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ENDNOTES

- ¹ Accra Agenda for Action. Accra, 4 September 2008. 3rd High-level forum on aid effectiveness.
- ² ITES refers to a broad category of services that cover front office services (i.e. call centres), back office services (such as data entry, human resources) and knowledge process outsourcing services (e.g. financial analysis servicers). ITES includes business processes outsourcing (BPO).
- ³ A broadly adopted definition based on ISIC Rev. 4 (unstats.un.org/unsd/cr/registry/isic-4.asp)
- ⁴ There is an additional group of related activities that cover ICT retail activities (ISIC 4741 Retail sale of computers, peripheral units, software and telecommunication equipment in special stores) but which is not included in the OECD definition of the ICT sector.
- ⁵ The digitization of public procurement processes.
- ⁶ The promotion of more transparent, effective and accountable governments.
- ⁷ Based on data provided by WITSA (the World Information Technology and Services Alliance)
- ⁸ As a consequence, the domestic market alone is often not able to absorb innovative software solutions and does not provide sufficient demand to induce growth effects.
- ⁹ See for example UNCTAD (2011c and 2011d) and BMZ (2011)
- ¹⁰ The report addresses public procurement in general.
- ¹¹ The report was prepared by an alliance of IT associations in which large enterprises competing at the international level have an active role. It does not necessarily address the specific needs of local SMEs. For instance, it recommends: “[Selection] criteria must treat foreign firms the same as national companies”.
- ¹² This applies at least to some of the transactions. Often, only tenders and awards are made public while the steps in between are accessible only to registered bidders.
- ¹³ See for example UNCTAD (2004) for a discussion of the potential costs and benefits of e-procurement.
- ¹⁴ Agreement on Government Procurement done at Marrakech on 15 April 1994, which entered into force on 1 February 1996. WTO web page: <http://www.wto.org>. Last referenced April 2012
- ¹⁵ For example, 30 per cent of local value addition is the limit for projects funded by the Asian Development Bank. See ADB (2010).
- ¹⁶ See <http://www.gnu.org/philosophy/free-sw.html>.
- ¹⁷ See Information Economy data in UNCTADstat (<http://unctadstat.unctad.org>)
- ¹⁸ Based on interviews and <http://ict4dblog.wordpress.com/2011/06/26/ict-and-economic-growth-evidence-from-kenya/>
- ¹⁹ Ushahidi is a non-profit firm that develops free and open source software for information collection, visualization and interactive mapping. Its SMS based crowd-sourcing platform, initially developed to map reports of violence in Kenya after the post-election fallout at the beginning of 2008, has been adopted in Haiti, Australia, and the United States in emergency situations to inform stakeholders
- ²⁰ Pamoja is a digital marketing company that provides (among other services) mobile application development services and web platform deployments to the African market.
- ²¹ World Bank, Kenya Transparency and Communications Infrastructure Program, <http://www.worldbank.org/projects/P127380/kenya-ktcipadditional-financing-rcip-1?lang=en>
- ²² Kenya was one of the first developing countries to have an open government data portal (<https://opendata.go.ke>)
- ²³ See, for example, Waema et al. (2010) or Box table 1

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- 24 See www.ict.go.ke
- 25 Based on interviews
- 26 World Bank, Kenya Transparency and Communication Infrastructure Project, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/06/13/000112742_20070613110259/Rendered/PDF/388900v20KE0IDA1R2007100551113.pdf
- 27 Based on the interviews carried out with key stakeholders
- 28 Kenya Institute of Supplies Management, Procurement and Supplies in Kenya: The Market of Small and Medium Enterprises, www.fsdkenya.org/pdf_documents/07.08.FSD_Procurement_Supply_Kenya.pdf.
- 29 Government of Kenya, Public Procurement and Disposal Act, www.ppoa.go.ke/index.php?option=com_jdownloads&Itemid=0&task=view.download&catid=22&cid=447
- 30 Government of Kenya, Supplies Practitioners Management Act 2007, www.kism.or.ke/images/stories/downloads/Supply_Practitioners_Mgt_Act_2007.pdf
- 31 Article 34 of PPDA
- 32 Kenya ICT Sector Policy Guidelines 2006, www.cck.go.ke/regulations/downloads/national_ict_policy.pdf
- 33 Kenya ICT Sector Policy Guidelines 2006, www.cck.go.ke/regulations/downloads/national_ict_policy.pdf
- 34 See Green Eco Consultants (2010)
- 35 <http://www.businessdailyafrica.com/Developers+lined+up+for+huge+gains+in+software+shift/-/1248928/1497380/-/kp7oeu/-/index.html>
- 36 Judging from the levels of mobile penetration and Internet use per inhabitant (ITU statistics)
- 37 Global Observer, Senegal Communication Profile 2012, <http://www.globserver.com/en/senegal-communication/communication>
- 38 Programme Sénégal-allemand d'Appui à la Compétitivité et à la Croissance des PME et à la Performance du Secteur de la Micro finance (PACC-PME/PMF)
- 39 Most of this subchapter, if not noted otherwise, is based on the GIZ study by Volker Brunsiek and Hannes Restel on the promotion of the interoperability of ICT systems in the public sector and the reinforcement of ICT SMEs in Senegal.
- 40 See OECD (2011)
- 41 CIO, Senegal Turns to Open Source Software, http://www.cio.com/article/19038/Senegal_Turns_to_Open_Source_Software
- 42 See for example the regional study on FOSS and software expenditure in West Africa (Internet Research, 2010)
- 43 Based on information provided by the Ministry of Economy and Finance of Senegal.
- 44 EIU and BSA IT Industry Competitiveness Ranking 2011. Rankings are available at <http://globalindex11.bsa.org/country-table/>. Kenya and Senegal do not feature in these rankings.
- 45 Fiscal Policy Circular No. 3/2005. 18th October 2005. Department of Fiscal Policy, General Treasury. Signed by P B Jayasundara, Secretary to the Treasury. Obtained via email correspondence with Mr. Christy Pereira of the ICT Agency of Sri Lanka
- 46 Such as the open source Bugzilla, which helps manage software development
- 47 Agile software development, based on the premise that it may not be possible/desirable to establish all technical requirements up-front, follows an incremental approach where software development plans are continuously revised and adapted. This approach is generally incompatible with traditional procurement processes, which require the up-front specification of all technical requirements. See for instance, Balter (2011)
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